

# CLASS 546, ORGANIC COMPOUNDS -- PART OF THE CLASS 532-570 SERIES

## SECTION I - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

In this series of classes, Class 546 is to be considered as an integral part of Class 260 (after subclass 544) and follows the schedule hierarchy retaining all pertinent definitions and class lines of Class 260.

### SUBCLASSES

#### 1 Hetero ring is six-membered consisting of one nitrogen and five carbons:

This subclass is indented under subclass 1. Compounds under Class 540, ... which contain a six-membered hetero ring consisting of one nitrogen and five carbon atoms.

##### SEE OR SEARCH CLASS:

588, Hazardous or Toxic Waste Destruction or Containment, appropriate subclasses for the destruction of hazardous or toxic waste.

#### 2 Heavy metal or aluminum containing:

This subclass is indented under subclass 1. Compounds which include aluminum or a metal having a specific gravity greater than four.

(1) Note. Arsenic is considered a metal.

##### SEE OR SEARCH THIS CLASS, SUBCLASS:

13, for compounds containing boron.

14, for compounds containing silicon.

#### 3 Arsenic containing:

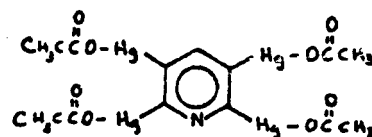
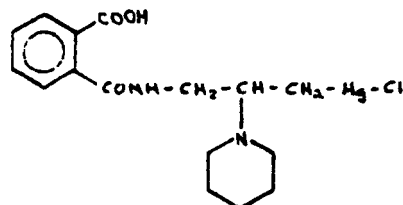
This subclass is indented under subclass 2. Compounds which contain arsenic.

#### 4 The metal bonded directly to carbon, which carbon is a ring carbon of the six-membered hetero ring or which carbon is attached directly or indirectly to the six-membered hetero ring by nonionic bonding:

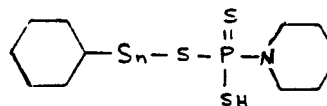
This subclass is indented under subclass 2. Compounds wherein the metal is bonded directly (a) to a ring carbon of the six-membered hetero ring, or (b) to a carbon atom

which additionally is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:



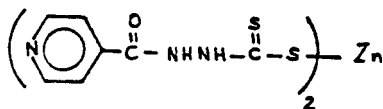
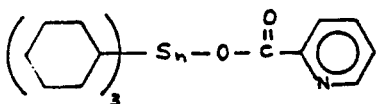
(2) Note. Excluded from this subclass are compounds such as, e.g., Figure 1 below which require "doubling back" through the metal to satisfy the conditions necessary for inclusion here.:



5 The metal is bonded directly to chalcogen of a -C(=X)X- group, wherein the X's are the same or diverse chalcogens, which group is attached directly or indirectly to the six-membered hetero ring by nonionic bonding: This subclass is indented under subclass 2. Compounds wherein the metal is bonded directly to the singly bonded chalcogen of a group, in which the X's are the same or diverse chalcogens (i.e., oxygen, sulfur, selenium, or tellurium), which group is additionally attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

(1) Note. These compounds are usually referred to as "salts".

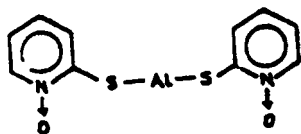
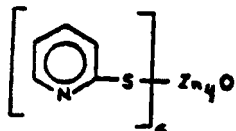
(2) Note. Examples of compounds provided for herein are:



- 6 The metal is bonded directly to chalcogen which chalcogen is attached directly or indirectly to the six-membered hetero ring by nonionic bonding:

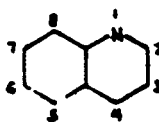
This subclass is indented under subclass 2. Compounds wherein the metal is bonded directly to a chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) which is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:

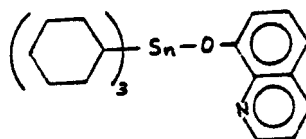


- 7 The chalcogen is bonded directly to ring carbon of a quinoline ring system (including hydrogenated):

This subclass is indented under subclass 6. Compounds wherein the chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to a ring carbon of a quinoline ring system; said ring system, having the following basic structure, may contain double bonds between ring members:



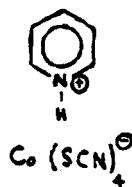
- (1) Note. An example of a compound provided for herein is:



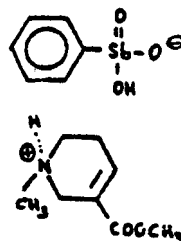
- 8 The metal is in an anion and the six-membered hetero ring is in a cation:

This subclass is indented under subclass 2. Compounds wherein the metal is in an anion, i.e., a group with a negative charge, and the six-membered hetero ring is in a cation, i.e., a group with a positive charge.

- (1) Note. These compounds are usually pyridinium salts of metallates, e.g.,



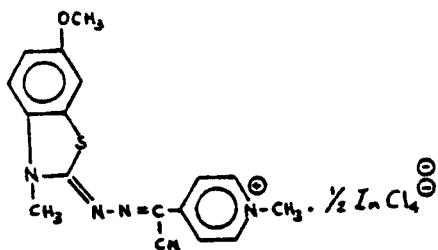
- (2) Note. An additional example of a compound provided for herein is:



**9 The metal is bonded directly to halogen in the anion:**

This subclass is indented under subclass 8. Compounds in which the metal in the anion is bonded directly to halogen; i.e., a metal-halogen bond.

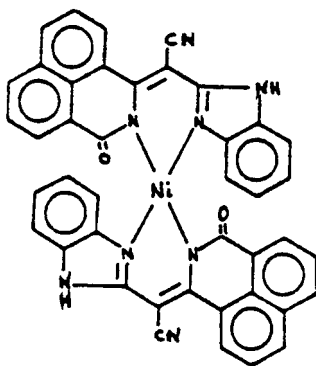
- (1) Note. An example of a compound provided for herein is:



**10 Polycyclo ring system having the six-membered hetero ring as one of the cyclos:**

This subclass is indented under subclass 2. Compounds wherein the six-membered hetero ring is a cyclo in a polycyclo ring system.

- (1) Note. An example of a compound provided for herein is:



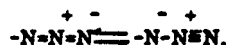
**11 Piperidine containing:**

This subclass is indented under subclass 2. Compounds which contain a piperidine ring, i.e., a six-membered hetero ring consisting of one ring nitrogen and five ring carbons with no double bonds between ring members.

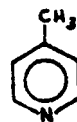
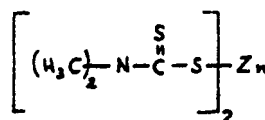
**12 Azide or acyclic nitrogen containing:**

This subclass is indented under subclass 2. Compounds which contain an acyclic nitrogen atom or an azide group.

- (1) Note. The azide has been considered to be cyclic,  $\text{—N=N=N—}$ , as well as acyclic,



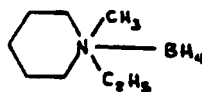
- (2) Note. An example of a compound provided for herein is:



**13 Boron containing:**

This subclass is indented under subclass 1. Compounds which contain boron.

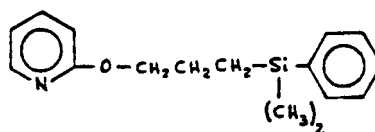
- (1) Note. An example of a compound provided for herein is:

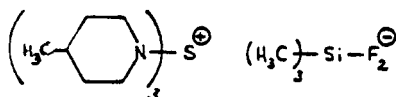
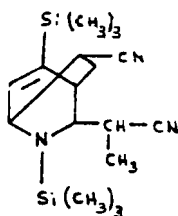


**14 Silicon containing:**

This subclass is indented under subclass 1. Compounds which contain silicon.

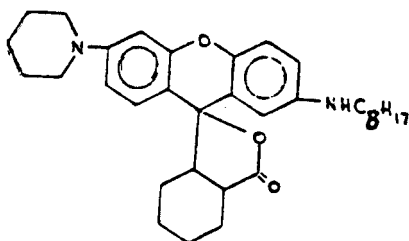
- (1) Note. Examples of compounds provided for herein are:



**15 Spiro:**

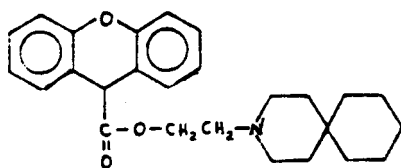
This subclass is indented under subclass 1. Compounds which contain a spiro ring system.

- (1) Note. An example of a compound provided for herein is:

**16 The spiro includes the six-membered hetero ring:**

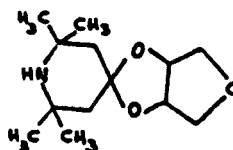
This subclass is indented under subclass 15. Compounds wherein at least one of the rings in the spiro ring system is the six-membered hetero ring which consists of one ring nitrogen and five ring carbons.

- (1) Note. An example of a compound provided for herein is:

**17 Polycyclo ring system having one of the two rings which form the spiro as one of the cyclos:**

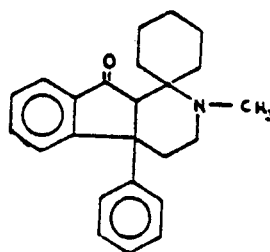
This subclass is indented under subclass 16. Compounds wherein one of the two rings which form the spiro ring system is additionally one of the cyclos of a polycyclo ring system.

- (1) Note. An example of a compound provided for herein is:

**18 Polycyclo ring system having the six-membered hetero ring as one of the cyclos:**

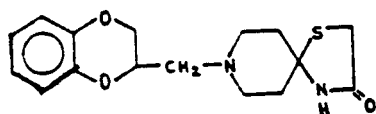
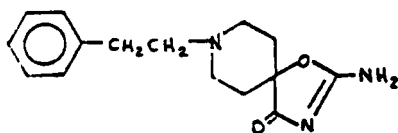
This subclass is indented under subclass 17. Compounds wherein the six-membered hetero ring is one of the cyclos of the polycyclo ring system.

- (1) Note. An example of a compound provided for herein is:

**19 At Least three ring hetero atoms in the two rings which form the spiro:**

This subclass is indented under subclass 16. Compounds wherein the spiro ring system contains at least two ring hetero atoms in addition to the ring nitrogen of the six-membered hetero ring.

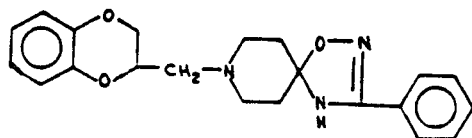
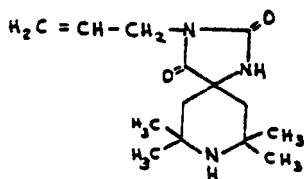
- (1) Note. Examples of compounds provided for herein are:



**20 At least three ring nitrogens in the two rings which form the spiro:**

This subclass is indented under subclass 19. Compounds wherein the spiro ring system includes at least two ring nitrogen atoms in addition to the one ring nitrogen of the six-membered hetero ring.

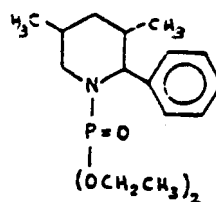
- (1) Note. Examples of compounds provided for herein are:



**21 Phosphorus attached directly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 1. Compounds wherein phosphorus is attached directly to the six-membered hetero ring by nonionic bonding.

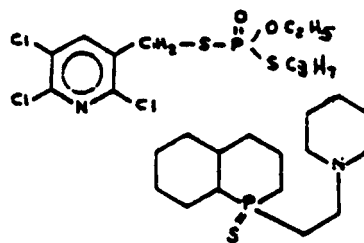
- (1) Note. An example of a compound provided for herein is:



**22 Phosphorus attached indirectly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 1. Compounds wherein phosphorus is attached indirectly to the six-membered hetero ring by nonionic bonding.

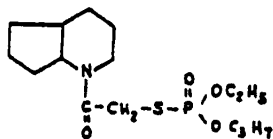
- (1) Note. Examples of compounds provided for herein are:



**23 Polycyclo ring system having the six-membered hetero ring as one of the cyclos:**

This subclass is indented under subclass 22. Compounds wherein the six-membered hetero ring is one of the cyclos of a polycyclo ring system.

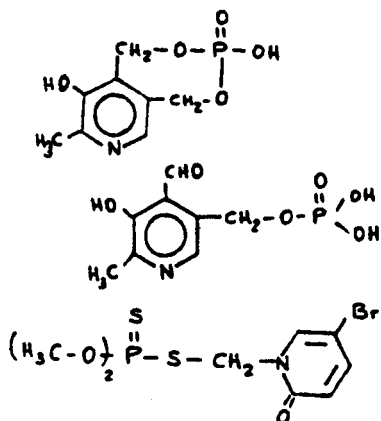
- (1) Note. Compounds in which phosphorus is attached directly by nonionic bonding to any ring of the polycyclo ring system other than the six-membered hetero ring are provided for herein as the attachment of the phosphorus to the six-membered hetero ring is considered to be indirect.
- (2) Note. An example of a compound provided for herein is:



**24 Chalcogen bonded directly to ring carbon for the six-membered hetero ring:**

This subclass is indented under subclass 22. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the six-membered hetero ring.

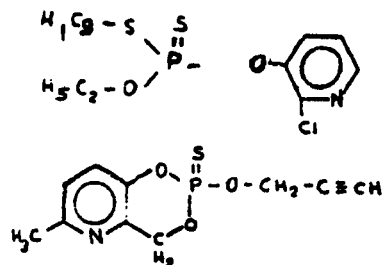
- (1) Note. Examples of compounds provided for herein are:



**25 The phosphorus is bonded directly to the chalcogen:**

This subclass is indented under subclass 24. Compounds in which the phosphorus is bonded directly to the chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

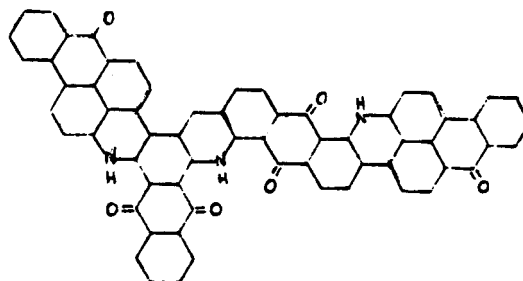
- (1) Note. Examples of compounds provided for herein are:



**26 Polycyclo ring system having the six-membered hetero ring as one of the cyclos:**

This subclass is indented under subclass 1. Compounds wherein the six-membered hetero ring is one of the cyclos of a polycyclo ring system.

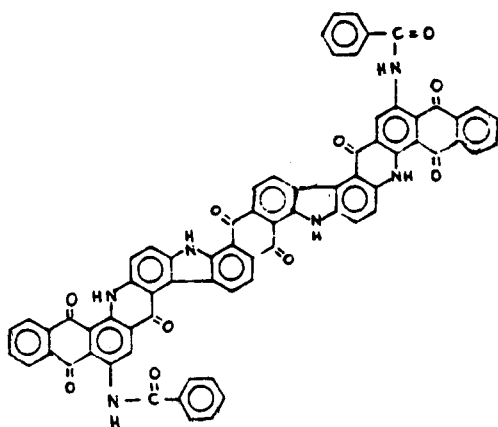
- (1) Note. An example of a compound provided for herein is:



**27 The polycyclo ring system has at least ten cyclos and at least four ring nitrogens:**

This subclass is indented under subclass 26. Compounds wherein the polycyclo ring system contains at least ten cyclos and at least four ring nitrogens.

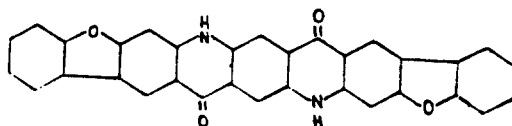
- (1) Note. An example of a compound provided for herein is:



**28 Nonacyclo ring system having the six-membered hetero ring as one of the cyclos:**

This subclass is indented under subclass 26. Compounds in which the polycyclo ring system consists of exactly nine rings.

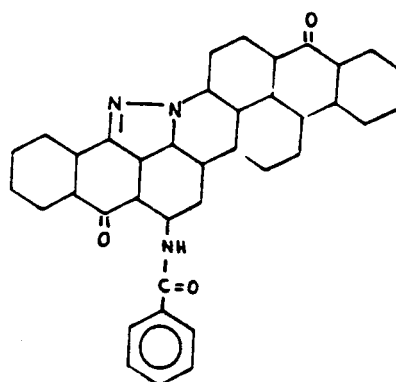
- (1) Note. An example of a compound provided for herein is:



**29 The six-membered hetero ring shares ring nitrogen with a five-membered cyclo which contains additional ring nitrogen:**

This subclass is indented under subclass 28. Compounds wherein the nitrogen atom of the six-membered hetero ring is also a member of a five-membered cyclo which contains additional ring nitrogen.

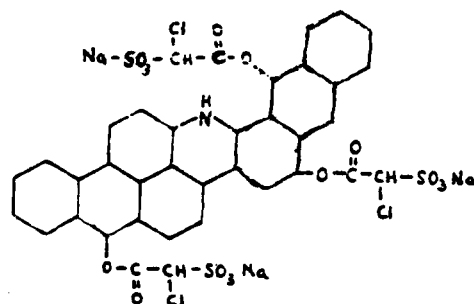
- (1) Note. An example of a compound provided for herein is:



**30 Octacyclo ring system having the six-membered hetero ring as one of the cyclos:**

This subclass is indented under subclass 26. Compounds in which the polycyclo ring system consists of exactly eight rings.

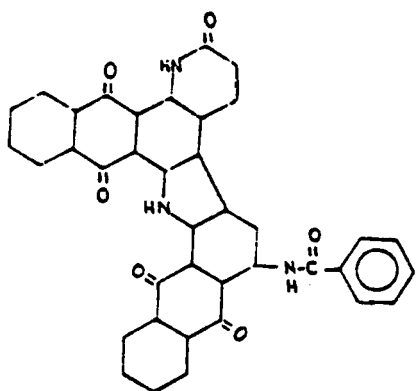
- (1) Note. An example of a compound provided for herein is:



**31 Plural ring hetero atoms in the octacyclo ring system (e.g., flavanthrone, cepharanthrine, etc.):**

This subclass is indented under subclass 30. Compounds wherein the octacyclo ring system includes at least one ring hetero atom in addition to the ring nitrogen of the six-membered hetero ring.

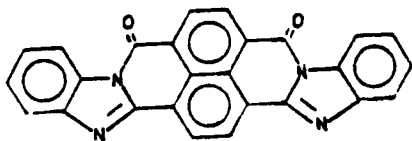
- (1) Note. An example of a compound provided for herein is:



**32 At least four ring nitrogens in the octacyclo ring system (e.g., naphthoylene dibenzimidazole, etc.):**

This subclass is indented under subclass 31. Compounds wherein the octacyclo ring system contains at least four ring nitrogens.

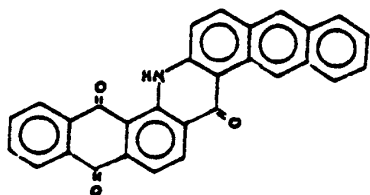
- (1) Note. An example of a compound provided for herein is:



**33 Heptacyclo ring system having the six-membered hetero ring as one of the cyclos:**

This subclass is indented under subclass 26. Compounds in which the polycyclo ring system consists of exactly seven rings.

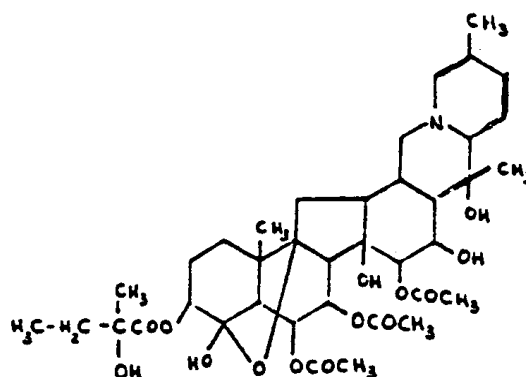
- (1) Note. An example of a compound provided for herein is:



**34 Two of the cyclos share at least three ring members (e.g., protoveratrine, etc.):**

This subclass is indented under subclass 33. Compounds wherein at least three ring members of one cyclo are ring members of an additional cyclo in the heptacyclo ring system (i.e., bridged).

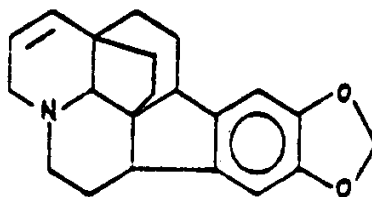
- (1) Note. An example of a compound included herein is:



**35 At least three ring hetero atoms in the heptacyclo ring system:**

This subclass is indented under subclass 34. Compounds wherein the heptacyclo ring system includes at least two ring hetero atoms in addition to the ring nitrogen of the six-membered hetero ring.

- (1) Note. An example of a compound provided for herein is:

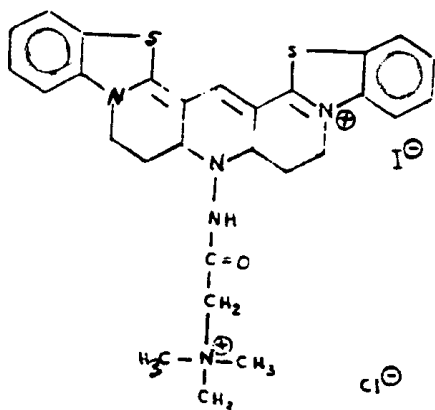


**36 Plural ring hetero atoms in the heptacyclo ring system:**

This subclass is indented under subclass 33. Compounds wherein the heptacyclo ring system includes at least one ring hetero atom in addition to the ring nitrogen of the six-membered hetero ring.



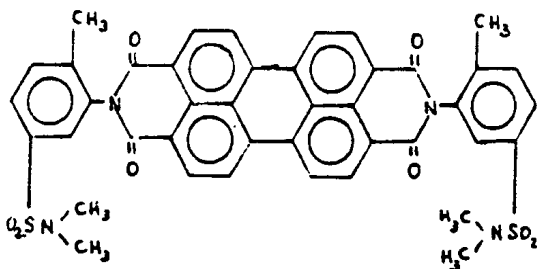
- (1) Note. An example of a compound provided for herein is:



- 37** **Ring carbon is shared by three of the cyclos (e.g., perylene tetracarboxylic acid diimide, etc.):**

This subclass is indented under subclass 36. Compounds wherein one ring carbon is a member of three of the cyclos in the heptacyclo ring system (i.e., peri-fusion).

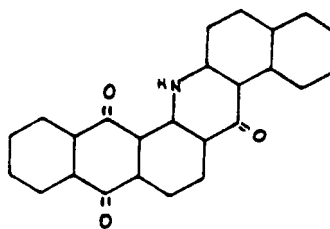
- (1) Note. An example of a compound provided for herein is:



- 38** **Hexacyclo ring system having the six-membered hetero ring as one of the cyclos:**

This subclass is indented under subclass 26. Compounds in which the polycyclo ring system consists of exactly six rings.

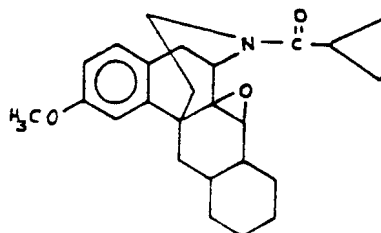
- (1) Note. An example of a compound provided for herein is:



- 39** **Two of the cyclos share at least three ring members (e.g., etheno morphides, etc.):**

This subclass is indented under subclass 38. Compounds wherein at least three ring members of one cyclo are ring members of an additional cyclo in the hexacyclo ring system (i.e., bridged).

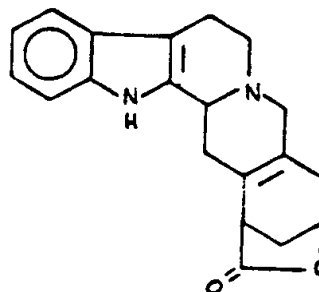
- (1) Note. An example of a compound provided for herein is:



- 40** **Plural ring nitrogens in the hexacyclo ring system (e.g., reserpine lactone, etc.):**

This subclass is indented under subclass 39. Compounds wherein the hexacyclo ring system includes at least two ring nitrogens.

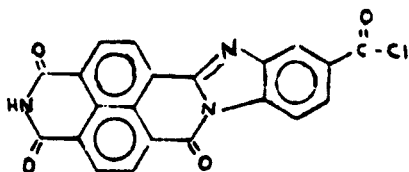
- (1) Note. An example of a compound provided for herein is:



**41 Plural ring hetero atoms in the hexacyclo ring system:**

This subclass is indented under subclass 38. Compounds wherein the hexacyclo ring system contains at least one ring hetero atom in addition to the ring nitrogen in the six-membered hetero ring.

- (1) Note. An example of a compound provided for herein is:

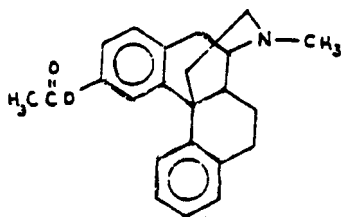
**42 Pentacyclo ring system having the six-membered hetero ring as one of the cyclos:**

This subclass is indented under subclass 26. Compounds in which the polycyclo ring system consists of exactly five rings.

**43 Two of the cyclos share at least three ring members (i.e., bridged):**

This subclass is indented under subclass 42. Compounds wherein at least three ring members of one cyclo are ring members of an additional cyclo in the pentacyclo ring system (i.e., bridged).

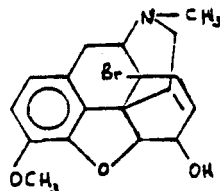
- (1) Note. An example of a compound provided for herein is:

**44 One of the five cyclos is five-membered and includes ring chalcogen (e.g., codeine, morphine, etc.):**

This subclass is indented under subclass 43. Compounds wherein one of the cyclos of the pentacyclo ring system is a five-membered het-

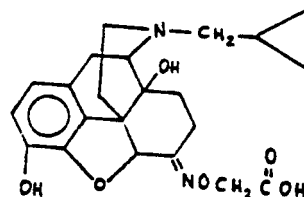
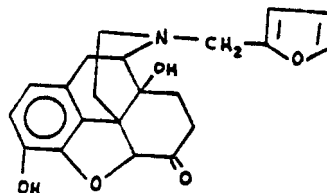
ero ring which contains ring chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

- (1) Note. An example of a compound provided for herein is:

**45 Nitrogen or divalent chalcogen double bonded directly to carbocyclic ring of the pentacyclo ring system (e.g., morphinones, etc):**

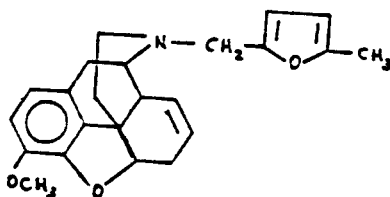
This subclass is indented under subclass 44. Compounds wherein a nitrogen atom or a divalent chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly by a double bond to a carbocyclic ring of the pentacyclo ring system.

- (1) Note. Examples of compounds provided for herein are:

**46 A Single chalcogen is bonded directly to ring carbon of the pentacyclo ring system (e.g., desoxy morphine, etc):**

This subclass is indented under subclass 44. Compounds wherein exactly one chalcogen atom (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the pentacyclo ring system.

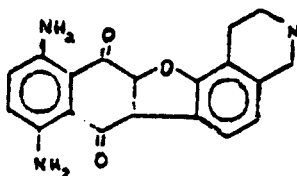
- (1) Note. This subclass provides for those compounds which contain only one chalcogen bonded directly to a ring carbon of the pentacyclo ring system, e.g., the desoxy morphines, etc.
- (2) Note. An example of such a compound is:



**47 Plural ring hetero atoms in the pentacyclo ring system:**

This subclass is indented under subclass 42. Compounds wherein the pentacyclo ring system contains at least one ring hetero atom in addition to the ring nitrogen of the six-membered hetero ring.

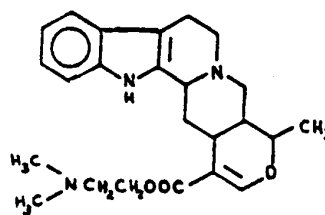
- (1) Note. An example of a compound provided for herein is:



**48 Three or more ring hetero atoms in the pentacyclo ring system:**

This subclass is indented under subclass 47. Compounds wherein the pentacyclo ring system contains at least two ring hetero atoms in addition to the ring nitrogen of the six-membered hetero ring.

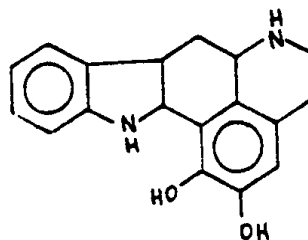
- (1) Note. An example of a compound provided for herein is:



**49 Two ring nitrogens in the pentacyclo ring system (e.g., quinacridones, etc.):**

This subclass is indented under subclass 47. Compounds wherein the pentacyclo ring system contains exactly two ring nitrogens.

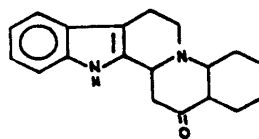
- (1) Note. An example of a compound provided for herein is:



**50 Ring nitrogen is shared by two of the cyclos (e.g., yohimbanes, etc.):**

This subclass is indented under subclass 49. Compounds wherein a ring nitrogen is a member of two of the cyclos in the pentacyclo ring system.

- (1) Note. An example of a compound provided for herein is:

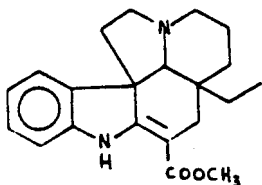


**51 Ring nitrogen is shared by five-membered cyclo and six-membered cyclo (e.g., vincamine, etc.):**

This subclass is indented under subclass 50. Compounds wherein the ring nitrogen of the six membered hetero ring is additionally a

member of a five-membered cyclo in the pentacyclo ring system.

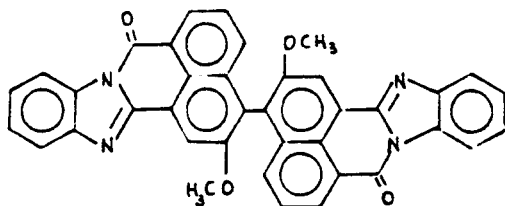
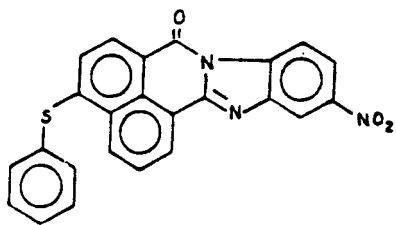
- (1) Note. An example of a compound provided for herein is:



**52 Additional ring nitrogen in the five-membered cyclo:**

This subclass is indented under subclass 51. Compounds in which the five-membered ring contains additional ring nitrogen.

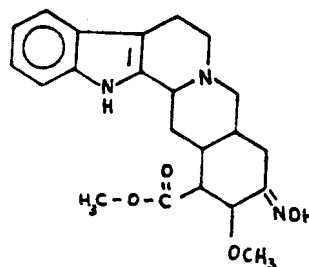
- (1) Note. Examples of compounds provided for herein are:



**53 Having -C(=X)-; wherein x is chalcogen, bonded directly to ring carbon of the pentacyclo ring system and also bonded directly to chalcogen or nitrogen:**

This subclass is indented under subclass 50. Compounds in which a group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly both to a ring carbon of the pentacyclo ring system and to a chalcogen or nitrogen atom.

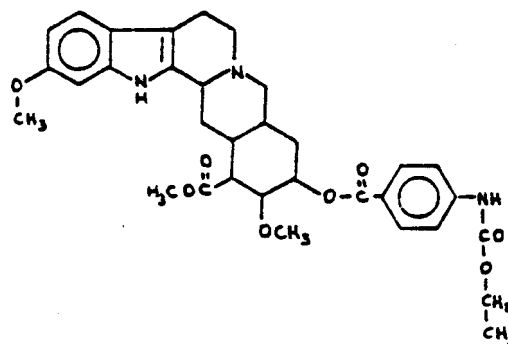
- (1) Note. An example of a compound provided for herein is:



**54 Plural chalcogens bonded directly to the same cyclo as is the -C(=X)- group:**

This subclass is indented under subclass 53. Compounds wherein at least two chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are bonded directly to the same cyclo as is the group.

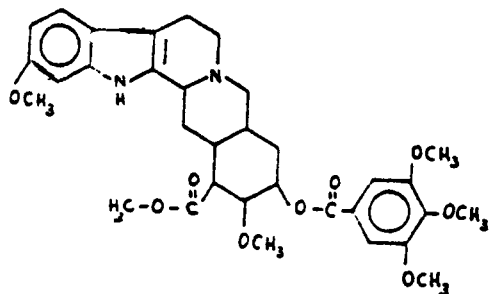
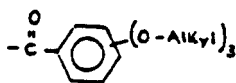
- (1) Note. An example of a compound provided for herein is:



**55 Trialkoxybenzoyl bonded directly to at least one of the chalcogens (e.g., reserpine, etc.):**

This subclass is indented under subclass 54. Compounds in which bonded directly to at least one of the chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) is a trialkoxybenzoyl group, i.e.,

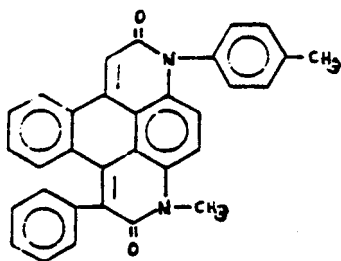
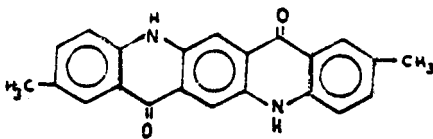
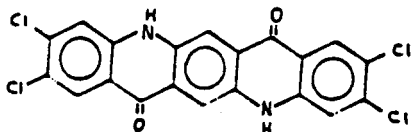
- (1) Note. An example of a compound provided for herein is:



- 56** Three or more ring carbons of the pentacyclo ring system are substituted (e.g., substituted quinacridones, etc.):

This subclass is indented under subclass 49. Compounds which contain substituents (other than hydrogen) on at least three of the ring carbons of the pentacyclo ring system.

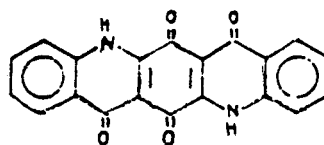
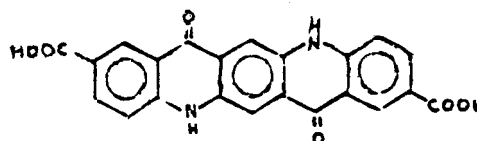
- (1) Note. Examples of compounds provided for herein are:



- 57 Three or more chalcogens containing:**

This subclass is indented under subclass 56. Compounds which contain at least three chalcogens (i.e., oxygen, sulfur, selenium, or tellurium).

- (1) Note. Examples of compounds provided for herein are:



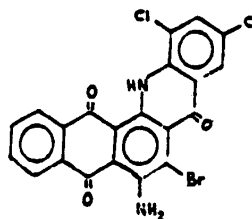
- 58**      **The pentacyclo ring system consists of five six-membered cyclos (e.g., anthraquinone-benzacridones, etc):**

This subclass is indented under subclass 42. Compounds wherein the pentacyclo ring system consists of five six-membered cyclos.

- 59 Nitrogen attached directly to the pentacyclo  
ring system by nonionic bonding:**

This subclass is indented under subclass 58. Compounds wherein nitrogen is attached directly to the pentacyclo ring system by non-ionic bonding.

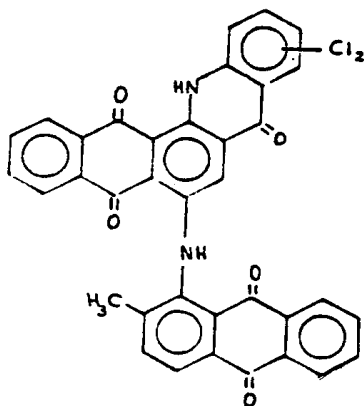
- (1) Note. An example of a compound provided for herein is:



**60 An additional ring is bonded directly to the nitrogen:**

This subclass is indented under subclass 59. Compounds in which an additional ring is bonded directly to the nitrogen.

- (1) Note. An example of a compound provided for herein is:

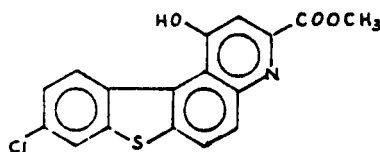
**61 Tetracyclo ring system having the six-membered hetero ring as one of the cyclos:**

This subclass is indented under subclass 26. Compounds in which the poly-cyclo ring system consists of exactly four rings.

**62 Plural ring hetero atoms in the tetracyclo ring system (e.g., acronycines, etc.):**

This subclass is indented under subclass 61. Compounds wherein the tetracyclo ring system contains at least one ring hetero atom in addition to the ring nitrogen of the six-membered hetero ring.

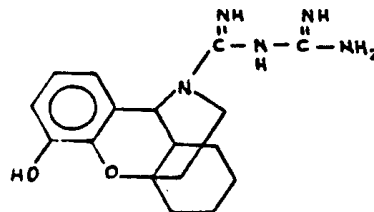
- (1) Note. An example of a compound provided for herein is:

**63 Two of the cyclos share at least three ring members (i.e., bridged):**

This subclass is indented under subclass 62. Compounds wherein at least three ring members of one cyclo are ring members of an addi-

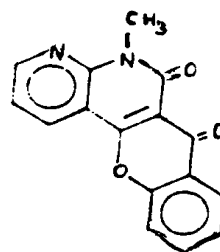
tional cyclo in the tetracyclo ring system (i.e., bridged).

- (1) Note. An example of a compound provided for herein is:

**64 Three or more ring hetero atoms in the tetracyclo ring system:**

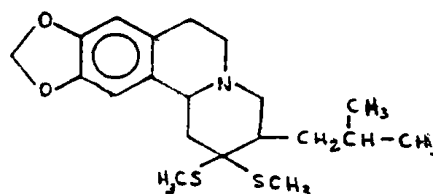
This subclass is indented under subclass 62. Compounds wherein the tetracyclo ring system contains at least two ring hetero atoms in addition to the ring nitrogen of the six-membered hetero ring.

- (1) Note. An example of a compound provided for herein is:

**65 Plural ring chalcogens in the tetracyclo ring system:**

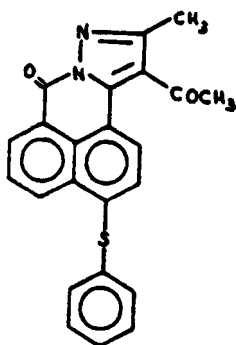
This subclass is indented under subclass 64. Compounds wherein the tetracyclo ring system contains at least two ring chalcogens (i.e., oxygen, sulfur, selenium, or tellurium).

- (1) Note. An example of a compound provided for herein is:



- 66 Ring carbon is shared by three of the cyclos:**  
This subclass is indented under subclass 62. Compounds wherein one ring carbon is a member of three of the cyclos in the tetracyclo ring system (i.e., peri-fusion).

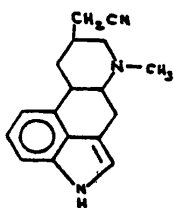
(1) Note. An example of a compound provided for herein is:



- 67 The three cyclos consist of two carbocyclic rings and a five-membered hetero ring which includes a ring nitrogen (e.g., ergolines, etc.):**

This subclass is indented under subclass 66. Compounds wherein the three cyclos which share the ring carbon consist of two carbocyclic rings and one five-membered hetero ring which contains a ring nitrogen.

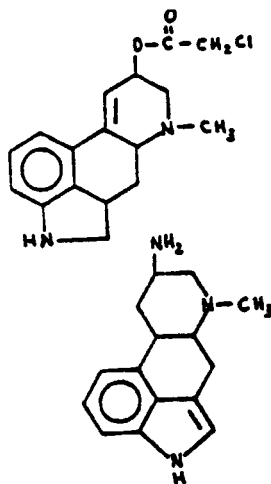
(1) Note. An example of a compound provided for herein is:



- 68 Chalcogen or nitrogen bonded directly to ring carbon of the six-membered hetero ring:**

This subclass is indented under subclass 67. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) or nitrogen is bonded directly to a ring carbon of the six-membered hetero ring.

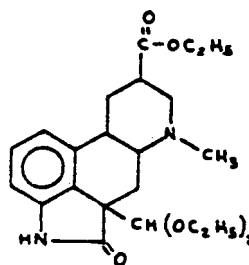
(1) Note. Examples of compounds provided for herein are:



- 69 Having -C(=X)-, wherein X is chalcogen, bonded directly to the six-membered hetero ring (e.g., lysergic acid, etc.):**

This subclass is indented under subclass 67. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly to the six-membered hetero ring.

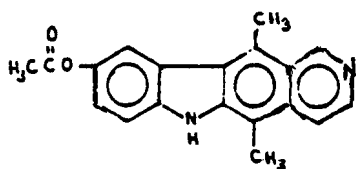
(1) Note. An example of a compound provided for herein is:



- 70 Two ring nitrogens in the tetracyclo ring system:**

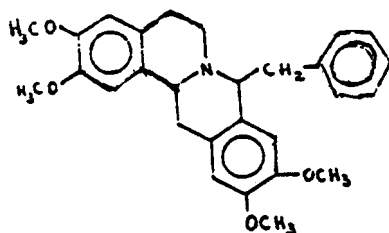
This subclass is indented under subclass 62. Compounds in which the tetracyclo ring system contains exactly two ring nitrogens.

(1) Note. An example of a compound provided for herein is:



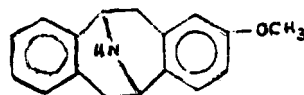
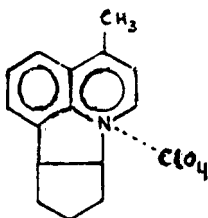
- 71 Ring nitrogen is shared by two of the cyclos:**  
This subclass is indented under subclass 61. Compounds wherein the ring nitrogen of the six-membered hetero ring is a member of an additional cyclo in the tetracyclo ring system.

(1) Note. An example of a compound provided for herein is:



- 72 Two of the cyclos share at least three ring members or a ring carbon is shared by three of the cyclos (i.e., bridged or peri-fused):**  
This subclass is indented under subclass 71. Compounds wherein at least three ring members of one cyclo are ring members of an additional cyclo or a ring carbon is a member of three of the cyclos in the tetracyclo ring system (i.e., bridged or peri-fused).

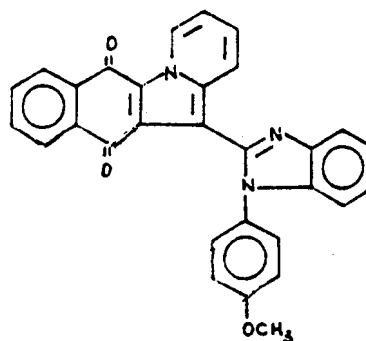
(1) Note. Examples of compounds provided for herein are:



- 73 The six-membered hetero ring shares ring members with one other cyclo only (e.g., pyrrocolines, etc.):**

This subclass is indented under subclass 71. Compounds wherein ring members of the six-membered hetero ring are ring members of one additional cyclo only in the tetracyclo ring system.

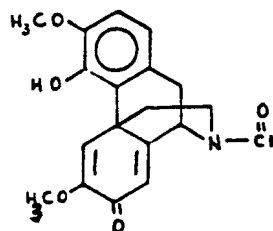
(1) Note. An example of a compound provided for herein is:



- 74 Two of the cyclos share at least three ring members (e.g., morphinans, etc.):**

This subclass is indented under subclass 61. Compounds wherein at least three ring members of one cyclo are ring members of an additional cyclo in the tetracyclo ring system (i.e., bridged).

(1) Note. An example of a compound provided for herein is:

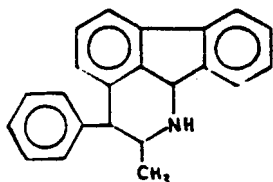




**75 Ring carbon is shared by three of the cyclos:**

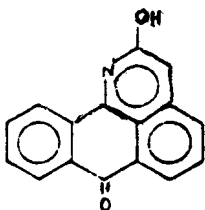
This subclass is indented under subclass 61. Compounds wherein one ring carbon is a member of three of the cyclos in the tetracyclo ring system (i.e., peri-fusion).

- (1) Note. An example of a compound provided for herein is:

**76 Chalcogen bonded directly to ring carbon of the six-membered hetero ring (e.g., anthrapyridones, etc.):**

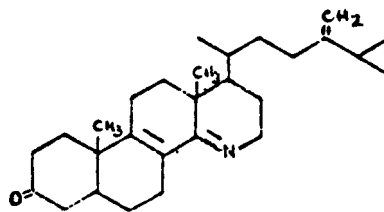
This subclass is indented under subclass 75. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the six-membered hetero ring.

- (1) Note. An example of a compound provided for herein is:

**77 The six-membered hetero ring shares ring members with one other cyclo only:**

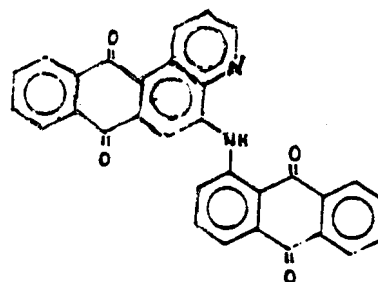
This subclass is indented under subclass 61. Compounds wherein ring members of the six-membered hetero ring are ring members of one additional cyclo only in the tetracyclo ring system.

- (1) Note. An example of a compound provided for herein is:

**78 Plural chalcogens bonded directly to carbocyclic rings of the tetracyclo ring system (e.g., pyridoanthraquinones, etc.):**

This subclass is indented under subclass 77. Compounds wherein at least two chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are bonded directly to carbocyclic rings of the tetracyclo ring system.

- (1) Note. An example of a compound provided for herein is:

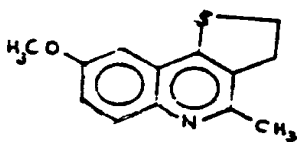
**79 Tricyclo ring system having the six-membered hetero ring as one of the cyclos:**

This subclass is indented under subclass 26. Compounds in which the polycyclo ring system consists of exactly three rings.

**80 Plural ring hetero atoms in the tricyclo ring system:**

This subclass is indented under subclass 79. Compounds wherein the tricyclo ring system contains at least one ring hetero atom in addition to the ring nitrogen of the six-membered hetero ring.

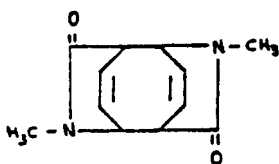
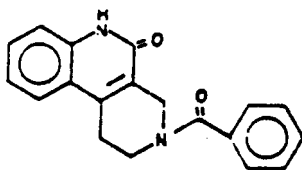
- (1) Note. An example of a compound provided for herein is:



**81 Plural ring nitrogens in the tricyclo ring system:**

This subclass is indented under subclass 80. Compounds wherein the tricyclo ring system contains at least two ring nitrogens.

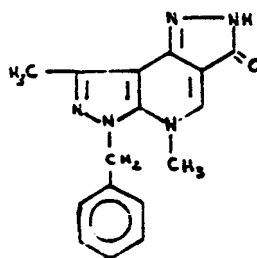
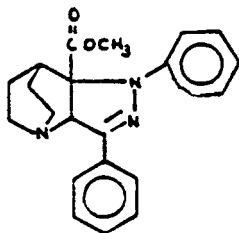
- (1) Note. Examples of compounds provided for herein are:



**82 Three or more ring hetero atoms in the tricyclo ring system:**

This subclass is indented under subclass 81. Compounds wherein the tricyclo ring system contains at least one additional ring hetero atom.

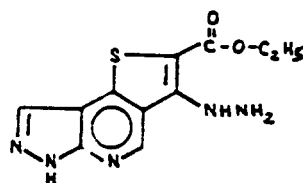
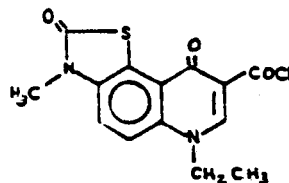
- (1) Note. Examples of compounds provided for herein are:



**83 At least one of the ring hetero atoms is chalcogen:**

This subclass is indented under subclass 92. Compounds wherein at least one of the additional ring hetero atoms is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

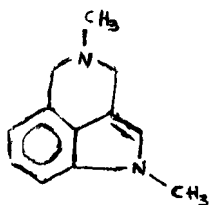
- (1) Note. Examples of compounds provided for herein are:



**84 One of the cyclos is five-membered:**

This subclass is indented under subclass 81. Compounds wherein one of the cyclos of the tricyclo ring system to five-membered.

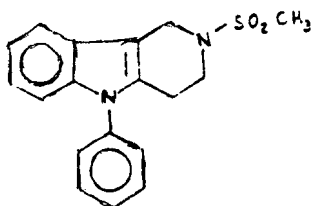
- (1) Note. An example of a compound provided for herein is:



**85 The six-membered hetero ring shares ring members with the five-membered ring only (e.g., pyrido-indoles, etc.):**

This subclass is indented under subclass 84. Compounds in which the six-membered hetero ring has ring members in common with the five-membered ring only in the tricyclo ring system.

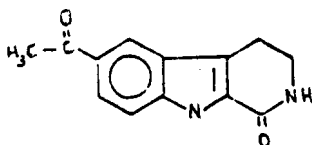
- (1) Note. An example of a compound provided for herein is:



**86 Chalcogen bonded directly to ring carbon of the tricyclo ring system:**

This subclass is indented under subclass 85. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to ring carbon of the tricyclo ring system.

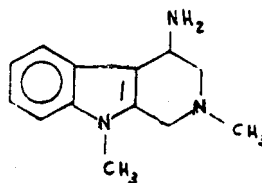
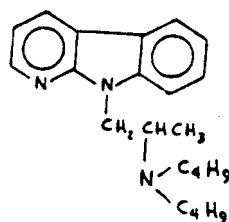
- (1) Note. An example of a compound provided for herein is:



**87 Nitrogen attached directly or indirectly to the tricyclo ring system by nonionic bonding:**

This subclass is indented under subclass 85. Compounds in which nitrogen is attached directly or indirectly to the tricyclo ring system by nonionic bonding.

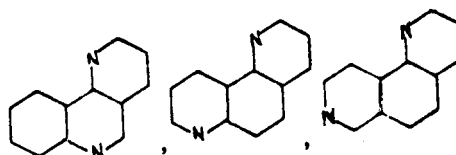
- (1) Note. Examples of compounds provided for herein are:

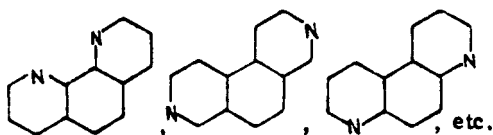


**88 Phenanthrolines (including hydrogenated):**

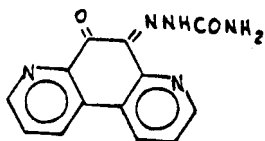
This subclass is indented under subclass 81. Compounds wherein the tricyclo ring system consists of three six-membered rings forming the phenanthrene configuration in which two ring carbons have been replaced by ring nitrogens; said ring system may contain double bonds between ring members.

- (1) Note. The phenanthroline ring system can be represented by any one of the following basic structures:



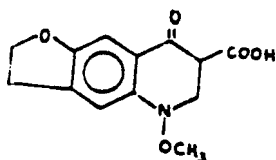


- (2) Note. An example of a compound provided for herein is:



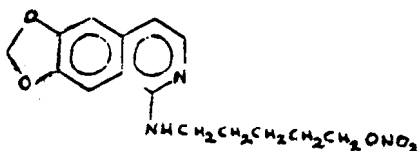
- 89 Ring oxygen in the tricyclo ring system:**  
This subclass is indented under subclass 80. Compounds in which the tricyclo ring system contains ring oxygen.

- (1) Note. An example of a compound provided for herein is:



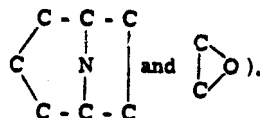
- 90 Plural ring oxygens in the tricyclo ring system:**  
This subclass is indented under subclass 89. Compounds in which the tricyclo ring system contains at least two ring oxygens.

- (1) Note. An example of a compound provided for here is:

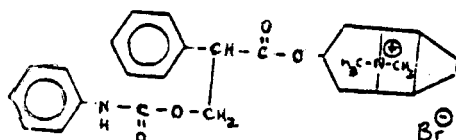


- 91 Tropane and oxirane in the tricyclo ring system:**

This subclass is indented under subclass 89. Compounds wherein the tricyclo ring system consists of the tropane and oxirane nuclei.



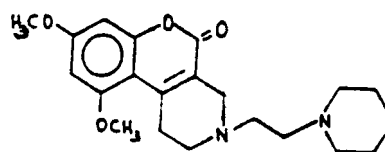
- (1) Note. An example of a compound provided for herein is:



- 92 Plural chalcogens bonded directly to ring carbons of the tricyclo ring system:**

This subclass is indented under subclass 89. Compounds wherein at least two chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are bonded directly to ring carbons of the tricyclo ring system.

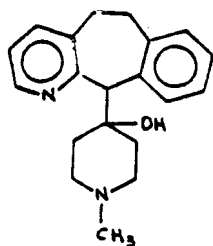
- (1) Note. An example of a compound provided for herein is:



- 93 One of the cyclos has at least seven members:**

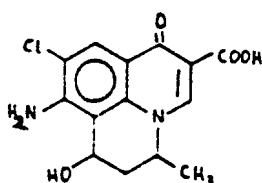
This subclass is indented under subclass 79. Compounds wherein one of the cyclos of the tricyclo ring system has at least seven members.

- (1) Note. An example of a compound provided for herein is:

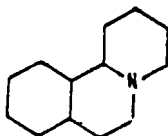


- 94 Ring nitrogen is shared by two of the cyclos:**  
This subclass is indented under subclass 79. Compounds wherein the ring nitrogen is a member of two of the cyclos in the tricyclo ring system.

(1) Note. An example of a compound provided for herein is:

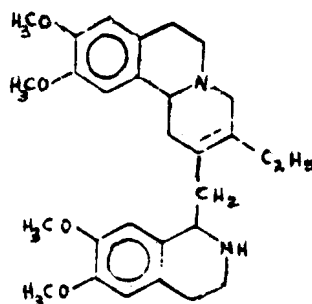


- 95 Benzo (a) quinolizines (including hydrogenated):**  
This subclass is indented under subclass 94. Compounds wherein the tricyclo ring system has the following basic structure, which may contain double bonds between ring members:



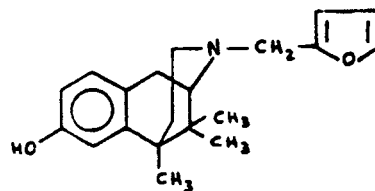
- 96 Additional polycyclo ring system having ring nitrogen (e.g., emetine, etc.):**  
This subclass is indented under subclass 95. Compounds which contain an additional polycyclo ring system having ring nitrogen.

(1) Note. An example of a compound provided for herein is:



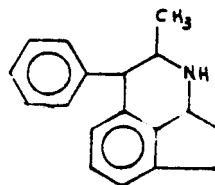
- 97 Two of the cyclos share at least three ring carbons (e.g., benzomorphans, etc.):**  
This subclass is indented under subclass 79. Compounds wherein at least three ring carbons of one cyclo are ring carbons of an additional cyclo in the tricyclo ring system (i.e., bridged).

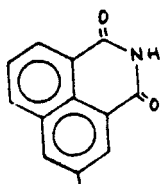
(1) Note. An example of a compound provided for herein is:



- 98 Ring carbon is shared by each of the three cyclos (e.g., 1,8-naphthalimides, etc.):**  
This subclass is indented under subclass 79. Compounds wherein a ring carbon is a member of each of the cyclos of the tricyclo ring system.

(1) Note. Examples of compounds provided for herein are:

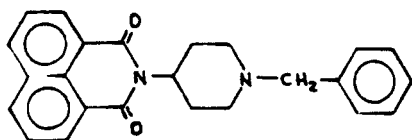
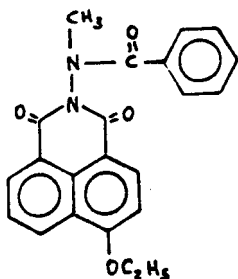




**99 Nitrogen, other than as nitro or nitroso, attached directly or indirectly to the tricyclo ring system by nonionic bonding:**

This subclass is indented under subclass 98. Compounds wherein nitrogen, except as a member of the nitro (-NO<sub>2</sub>) or nitroso (-NO) group, is attached directly or indirectly to the tricyclo ring system by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:



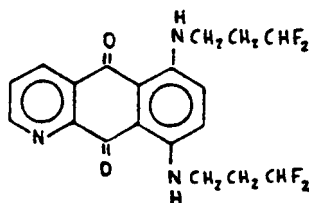
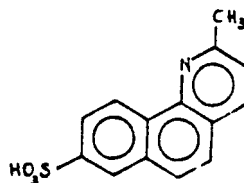
**100 The Nitrogen is bonded directly to a carbocyclic ring of the tricyclo ring system:**

This subclass is indented under subclass 99. Compounds in which the nitrogen is bonded directly to a carbocyclic ring of the tricyclo ring system.

**101 Each of the three cyclos is six-membered (e.g., benzoquinolines, etc.):**

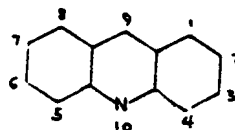
This subclass is indented under subclass 79. Compounds wherein the tricyclo ring system consists of three six-membered rings.

- (1) Note. Examples of compounds provided for herein are:



**102 Acridines (including hydrogenated):**

This subclass is indented under subclass 101. Compounds wherein the tricyclo ring system has the following basic structure, which may contain double bonds between ring members:



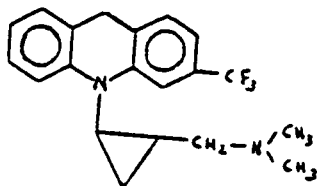
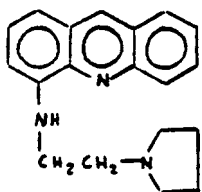
**103 Chalcogen bonded directly to ring carbon of the six-membered hetero ring:**

This subclass is indented under subclass 102. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to ring carbon of the six-membered hetero ring.

**104 Nitrogen, other than as nitro or nitroso, attached directly or indirectly to the acridine ring system by nonionic bonding:**

This subclass is indented under subclass 102. Compounds in which nitrogen, except as a member of the nitro (-NO<sub>2</sub>) or nitroso (-NO) group, is attached directly or indirectly to the acridine ring system by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:



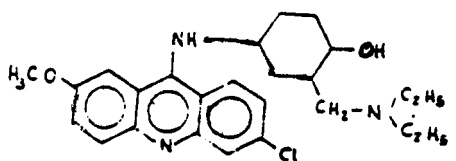
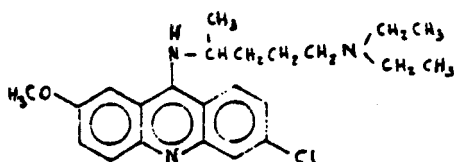
**105 The nitrogen is bonded directly to ring carbon of the six-membered hetero ring:**

This subclass is indented under subclass 104. Compounds in which the nitrogen is bonded directly to ring carbon of the six-membered hetero ring.

**106 The nitrogen is part of a substituent which contains additional nonionically bonded nitrogen:**

This subclass is indented under subclass 105. Compounds wherein the nitrogen is a member of a group containing additional nitrogen which is attached by nonionic bonding to the acridine ring system.

- (1) Note. Examples of compounds provided for herein are:

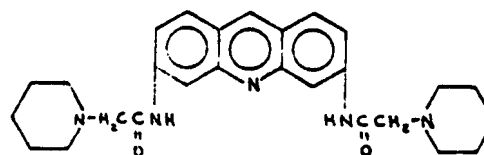


**107 Plural nitrogens, other than as nitro or nitroso, attached directly to the carbocyclic**

**rings of the acridine ring system (e.g., 3, 6-diaminoacridines, etc.):**

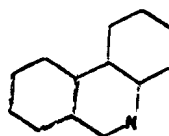
This subclass is indented under subclass 104. Compounds wherein at least two nitrogens, except as members of the nitro (-NO) or nitroso (-NO) group, are attached directly to the carbocyclic rings of the acridine ring system.

- (1) Note. An example of a compound provided for herein is:



**108 Phenanthridines (including hydrogenated):**

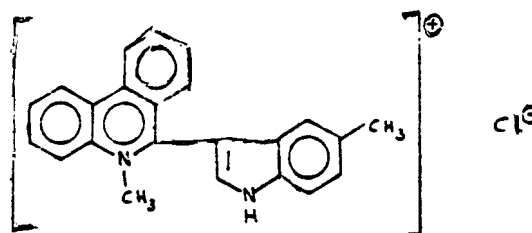
This subclass is indented under subclass 101. Compounds wherein the tricyclo ring system has the following basic structure, which may contain double bonds between ring members:



**109 Unsaturated ring bonded directly to ring carbon of the six-membered hetero ring:**

This subclass is indented under subclass 108. Compounds in which an unsaturated ring, i.e., a ring which contains at least one double bond between ring members, is bonded directly to ring carbon of the six-membered hetero ring.

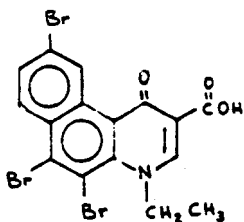
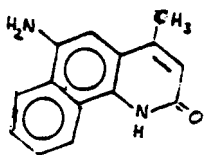
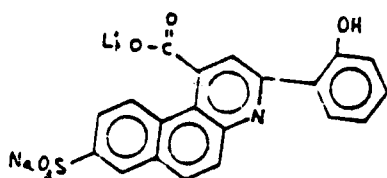
- (1) Note. Examples of compounds provided for herein are:



**110 Chalcogen or -C(=X)-, wherein X is chalcogen, attached directly to the six-membered hetero ring by nonionic bonding:**

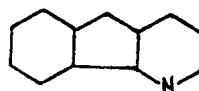
This subclass is indented under subclass 101. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium or tellurium), or a -C- group, in which X is chalcogen, is bonded directly to the six-membered hetero ring by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:

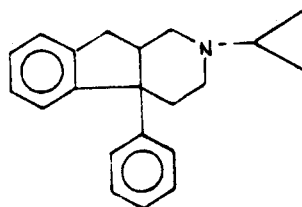


**111 The tricyclo ring system consists of a five-membered carbocyclic ring ortho fused to both a six-membered carbocyclic ring and the six-membered hetero ring (e.g., indenopyridines, etc.):**

This subclass is indented under subclass 79. Compounds in which the tricyclo ring system consists of a five-membered carbocyclic ring ortho fused to both a six-membered carbocyclic ring and the six-membered hetero ring; e.g.,



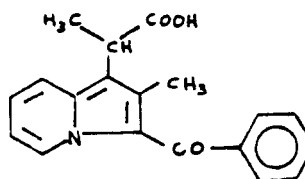
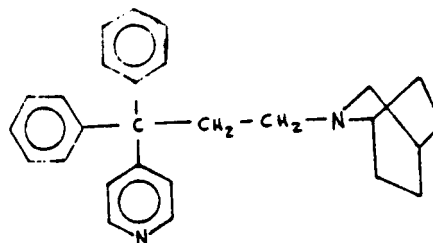
- (1) Note. An example of a compound provided for herein is:



**112 Bicyclo ring system having the six-membered hetero ring as one of the cyclos:**

This subclass is indented under subclass 26. Compounds in which the polycyclo ring system consists of exactly two rings.

- (1) Note. Examples of compounds provided for herein are:

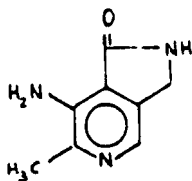


**113 Plural ring hetero atoms in the bicyclo ring system:**

This subclass is indented under subclass 112. Compounds wherein the bicyclo ring system includes at least one ring hetero atom in addition to the ring nitrogen of the six-membered hetero ring.



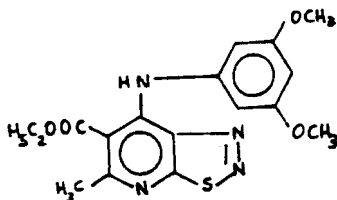
- (1) Note. An example of a compound provided for herein is:



**114 Ring sulfur in the bicyclo ring system:**

This subclass is indented under subclass 113. Compounds in which the bicyclo ring system contains ring sulfur.

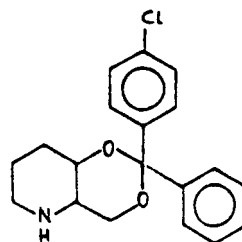
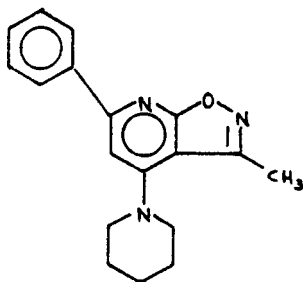
- (1) Note. An example of a compound provided for herein is:



**115 Ring oxygen in the bicyclo ring system:**

This subclass is indented under subclass 113. Compounds in which the bicyclo ring system contains ring oxygen.

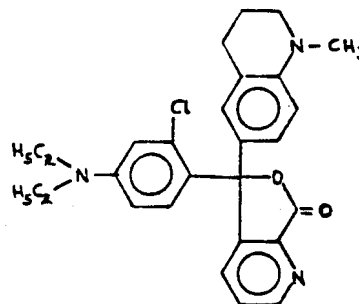
- (1) Note. Examples of compounds provided for herein are:



**116 Acyclic chalcogen bonded directly to ring carbon of the bicyclo ring system:**

This subclass is indented under subclass 115. Compounds in which acyclic chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to ring carbon of the bicyclo ring system.

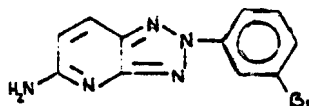
- (1) Note. Lactones of pyridine carboxylic acids are provided for in this subclass, e.g.:



**117 At least four ring nitrogens in the bicyclo ring system:**

This subclass is indented under subclass 113. Compounds wherein the bicyclo ring system contains at least four ring nitrogens.

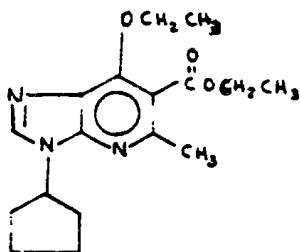
- (1) Note. An example of a compound provided for herein is:



**118 Three ring nitrogens in the bicyclo ring system:**

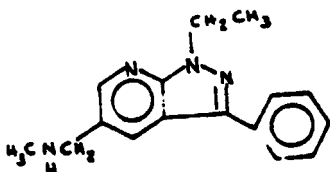
This subclass is indented under subclass 113. Compounds wherein the bicyclo ring system contains exactly three ring nitrogens.

- (1) Note. An example of a compound provided for herein is:

**119 Two of the ring nitrogens are bonded directly to each other:**

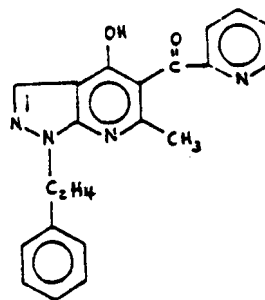
This subclass is indented under subclass 118. Compounds wherein two of the ring nitrogens are bonded directly to each other.

- (1) Note. An example of a compound provided for herein is:

**120 Having -C(=X)-, wherein X is chalcogen, bonded directly to the bicyclo ring system:**

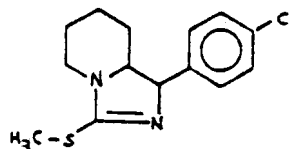
This subclass is indented under subclass 119. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly to the bicyclo ring system.

- (1) Note. An example of a compound provided for herein is:

**121 Ring nitrogen is shared by the two cyclos:**

This subclass is indented under subclass 113. Compounds wherein the ring nitrogen is a member of both cyclos of the bicyclo ring system.

- (1) Note. An example of a compound provided for herein is:

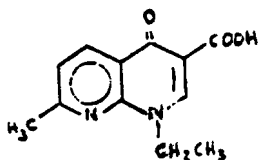
**122 The other cyclo in the bicyclo ring system is also six-membered (e.g., naphthyridines, etc.):**

This subclass is indented under subclass 113. Compounds wherein the bicyclo ring system consists of two six-membered cyclos.

**123 Chalcogen and -C(=X)-, wherein X is chalcogen bonded directly to ring carbons of the bicyclo ring system (e.g., 4-oxo-naphthyridine-3-carboxylic acid, etc.):**

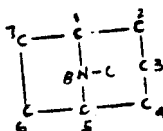
This subclass is indented under subclass 122. Compounds in which both chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) and a group, wherein X is chalcogen, are bonded directly to ring carbons of the bicyclo ring system.

- (1) Note. An example of a compound provided for herein is:

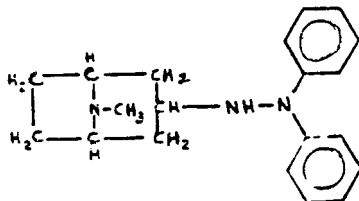


**124 Tropanes (including nor and dehydro forms):**

This subclass is indented under subclass 112. Compounds in which the bicyclo ring system has the following basic structure:



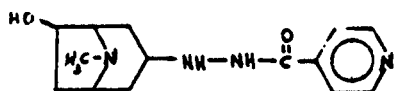
- (1) Note. Included here also are the nor- (absence of methyl group on ring nitrogen) and dehydro- (presence of double bonds between ring members) forms of tropane.
- (2) Note. An example of a compound provided for herein is:



**125 Additional hetero ring containing:**

This subclass is indented under subclass 124. Compounds which contain an additional hetero ring.

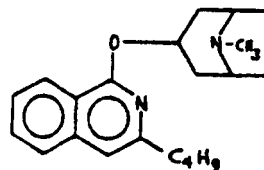
- (1) Note. An example of a compound provided for herein is:



**126 Additional polycyclo ring system having the additional hetero ring as one of the cyclos:**

This subclass is indented under subclass 125. Compounds wherein the additional hetero ring is one of the cyclos in a polycyclo ring system.

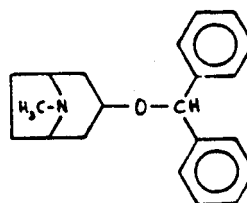
- (1) Note. An example of a compound provided for herein is:



**127 Chalcogen bonded directly to ring carbon of the tropane ring system:**

This subclass is indented under subclass 124. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the tropane ring system.

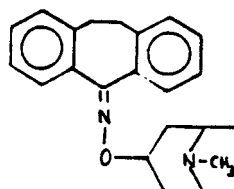
- (1) Note. An example of a compound provided for herein is:



**128 Polycyclo-carbocyclic ring system:**

This subclass is indented under subclass 127. Compounds having a carbocyclic ring system which contains at least two rings.

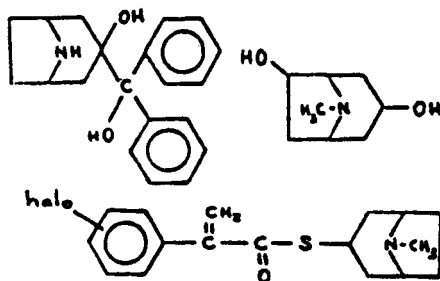
- (1) Note. An example of a compound provided for herein is:



**129 Additional chalcogen attached directly or indirectly to the tropane ring system by non-ionic bonding:**

This subclass is indented under subclass 127. Compounds wherein additional chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly or indirectly to the tropane ring system by nonionic bonding.

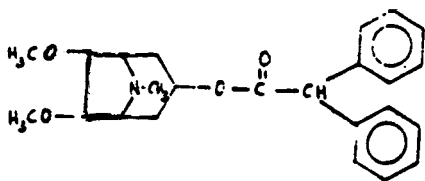
- (1) Note. Examples of compounds provided for herein are:



**130 Three or more oxygens attached directly or indirectly to the tropane ring system by non-ionic bonding:**

This subclass is indented under subclass 129. Compounds in which at least three oxygens are attached directly or indirectly to the tropane ring system by nonionic bonding.

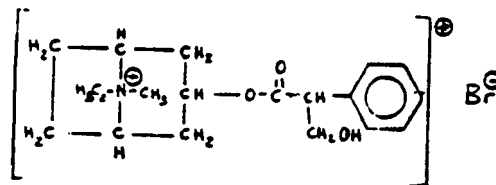
- (1) Note. An example of a compound provided for herein is:



**131 Hydroxy containing or containing oxy bonded directly to a group IA or group IIA light metal (i.e., -OH or -OM containing):**

This subclass is indented under subclass 130. Compounds which contain either an -OH or an -OM group, wherein M is a Group IA or Group IIA metal having specific gravity less than four.

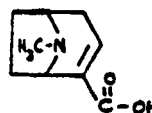
- (1) Note. An example of a compound provided for herein is:



**132 Having -C(=X), wherein X is chalcogen, bonded directly to the tropane ring system:**

This subclass is indented under subclass 124. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly to the tropane ring system.

- (1) Note. An example of a compound provided for herein is:

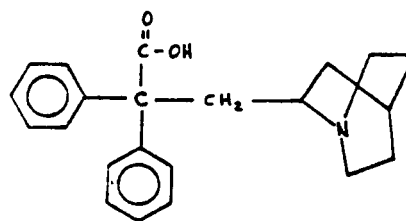


**133 Quinuclidines (including unsaturated):**

This subclass is indented under subclass 112. Compounds wherein the bicyclo ring system has the following basic structure, which may contain double bonds between ring members:

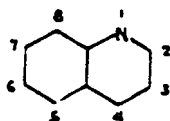


- (1) Note. An example of a compound provided for herein is:

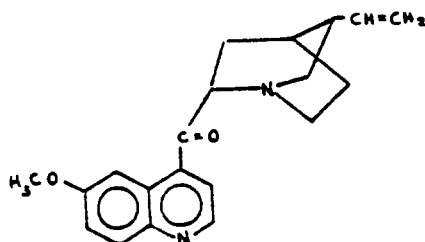


**134 Quinoline containing (including hydrogenated):**

This subclass is indented under subclass 133. Compounds containing the quinoline ring system, which may contain double bonds between ring members, i.e.,

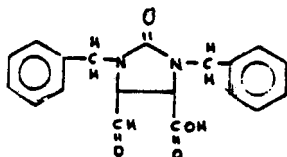
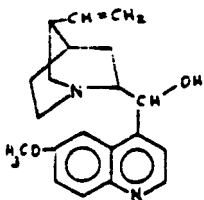


- (1) Note. An example of a compound provided for herein is:

**135 Additional hetero ring containing:**

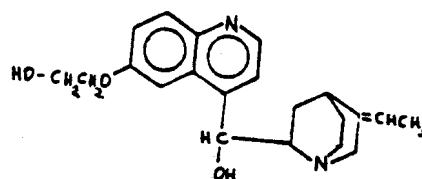
This subclass is indented under subclass 134. Compounds which contain an additional hetero ring.

- (1) Note. Examples of compounds provided for herein are:

**136 Three or more chalcogens attached indirectly to the quinuclidine ring system by nonionic bonding:**

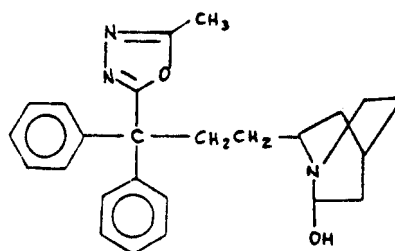
This subclass is indented under subclass 134. Compounds in which at least three chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are attached indirectly to the quinuclidine ring system by nonionic bonding.

- (1) Note. An example of a compound provided for herein is:

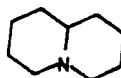
**137 Chalcogen bonded directly to ring carbon of the quinuclidine ring system:**

This subclass is indented under subclass 133. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the quinuclidine ring system.

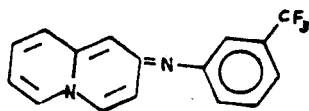
- (1) Note. An example of a compound provided for herein is:

**138 Quinolizines (including hydrogenated):**

This subclass is indented under subclass 112. Compounds wherein the bicyclo ring system has the following basic structure, which may contain double bonds between ring members:

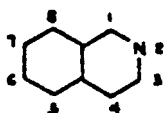


- (1) Note. An example of a compound provided for herein is:



**139 Isoquinolines (including hydrogenated):**

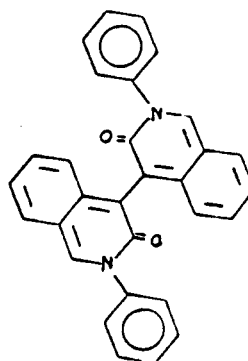
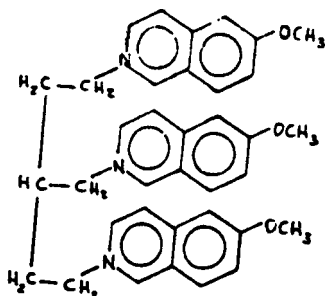
This subclass is indented under subclass 112. Compounds wherein the bicyclo ring system has the following structure, which may contain double bonds between ring members:



**140 Plural isoquinoline ring systems attached directly or indirectly to each other by non-ionic bonding:**

This subclass is indented under subclass 139. Compounds which contain at least two isoquinoline ring systems that are attached directly or indirectly to each other by nonionic bonding.

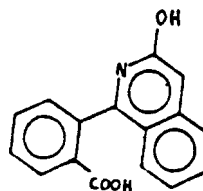
- (1) Note. Example of compounds provided for herein are:



**141 Chalcogen attached directly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 139. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the six-membered hetero ring of the isoquinoline ring system by nonionic bonding.

- (1) Note. An example of a compound provided for herein is:



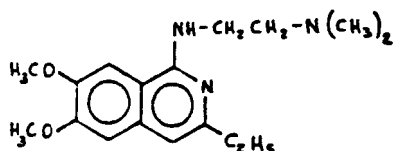
**142 Plural chalcogens attached directly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 141. Compounds wherein at least two chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are attached directly to the six-membered hetero ring of the isoquinoline ring system by non-ionic bonding.

**143 Nitrogen, other than as nitro or nitroso, attached directly to the isoquinoline ring system by nonionic bonding:**

This subclass is indented under subclass 139. Compounds wherein nitrogen, except as a member of the nitro (-NO<sub>2</sub>) or nitroso (-NO) group, is attached directly to the isoquinoline ring system by nonionic bonding.

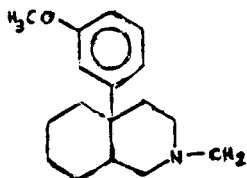
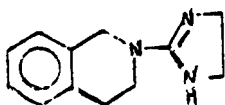
- (1) Note. An example of a compound provided for herein is:



**144 Unsaturated ring attached directly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 139. Compounds wherein an unsaturated ring, i.e., a ring having at least one double bond between ring members, is attached directly to the six-membered hetero ring by nonionic bonding.

- (1) Note. The term "unsaturated ring" as used herein does not refer to the six-membered carbocyclic ring of the isoquinoline ring system but rather to an additional unsaturated ring which is attached directly to the six-membered ring.
- (2) Note. Examples of compounds provided for herein are:

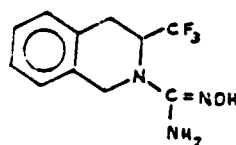
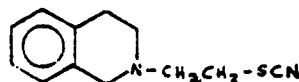


**145 Acyclic nitrogen double or triple bonded to carbon which is attached directly or indirectly to the isoquinoline ring system by nonionic bonding:**

This subclass is indented under subclass 139. Compounds wherein acyclic nitrogen is attached by a double or triple bond to carbon which in turn is attached directly or indirectly

to the isoquinoline ring system by nonionic bonding.

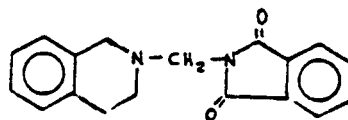
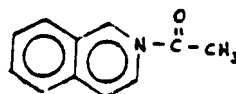
- (1) Note. Examples of compounds provided for herein are:



**146 Having -C(=X)-, wherein X is chalcogen, attached directly or indirectly to the isoquinoline ring system by nonionic bonding:**

This subclass is indented under subclass 139. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly or indirectly to the isoquinoline ring system by nonionic bonding.

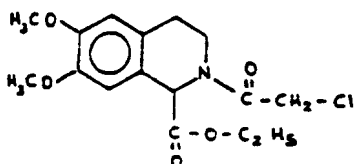
- (1) Note. Examples of compounds provided for herein are:



**147 The -C(=X)- is Part of a -C(=X)X- group, wherein the X's are the same or diverse chalcogens:**

This subclass is indented under subclass 146. Compounds in which the -C(=X)- is part of a group, wherein the X's are the same, or diverse, chalcogens (i.e., oxygen, sulfur, selenium, or tellurium.)

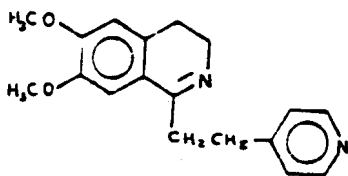
- (1) Note. An example of a compound provided for herein is:



**148 Unsaturated hetero ring attached indirectly to the isoquinoline ring system by nonionic bonding:**

This subclass is indented under subclass 139. Compounds wherein an unsaturated hetero ring, i.e., a hetero ring having at least one double bond between ring members, is attached indirectly to the isoquinoline ring system by nonionic bonding.

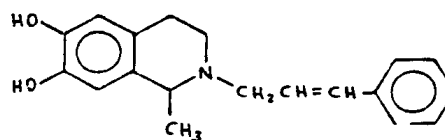
- (1) Note. An example of a compound provided for herein is:



**149 Unsaturated carbocyclic ring attached indirectly to the six-membered hetero ring through an acyclic hydrocarbon chain:**

This subclass is indented under subclass 139. Compounds wherein an unsaturated carbocyclic ring, i.e., a ring consisting of carbon atoms and having at least one double bond between ring members, is attached indirectly to the six-membered hetero ring of the isoquinoline ring system through an acyclic hydrocarbon chain, i.e., a chain consisting of carbon and hydrogen atoms.

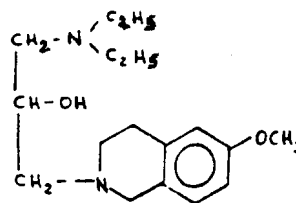
- (1) Note. An example of a compound provided for herein is:



**150 Single bond between 3,4-positions:**

This subclass is indented under subclass 139. Compounds wherein there is a single bond between the 3,4-positions of the isoquinoline ring system.

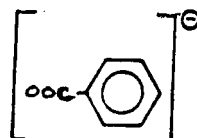
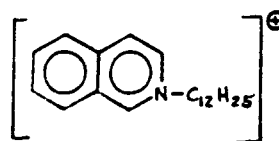
- (1) Note. An example of a compound provided for herein is:



**151 N-alkyl or n-alkenyl isoquinoliniums which are otherwise unsubstituted or alkyl or alkenyl substituted only:**

This subclass is indented under subclass 139. Compounds wherein the carbon atoms of the isoquinoline ring system are unsubstituted or contain an alkyl or alkenyl substituent only and in which the nitrogen atom is pentavalent having bonded directly thereto an alkyl or alkenyl group.

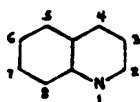
- (1) Note. An example of a compound provided for herein is:





**152 Quinolines (including hydrogenated):**

This subclass is indented under subclass 112. Compounds in which the bicyclo ring system has the following basic structure, which may contain double bonds between ring members:

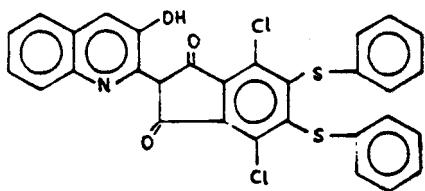
**153 Chalcogen attached directly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 152. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the six-membered hetero ring of the quinoline ring system by nonionic bonding.

**154 Polycyclo-carbocyclic ring system bonded directly to the six-membered hetero ring (e.g., quinophthalones, etc.):**

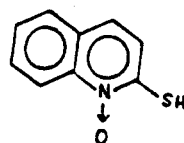
This subclass is indented under subclass 153. Compounds in which a polycyclo-carbocyclic ring system is bonded directly to the six-membered hetero ring of the quinoline ring system.

(1) Note. An example of a compound provided for herein is:

**155 Plural chalcogens attached directly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 153. Compounds in which at least two chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are attached directly to the six-membered hetero ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:

**156 Having -C(=X)-, wherein X is chalcogen, bonded directly to the six-membered hetero ring:**

This subclass is indented under subclass 153. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly to the six-membered hetero ring.

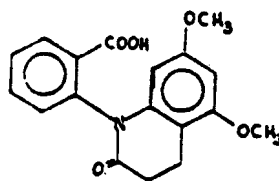
**157 Chalcogen attached directly at 2-position by nonionic bonding:**

This subclass is indented under subclass 153. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly at the 2-position of the quinoline ring system by nonionic bonding.

**158 Single bond between 3,4-positions:**

This subclass is indented under subclass 157. Compounds in which there is a single bond between positions 3 and 4 of the quinoline ring system.

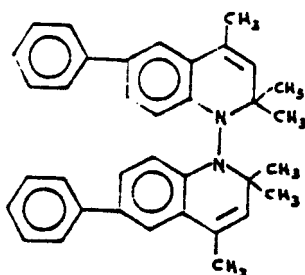
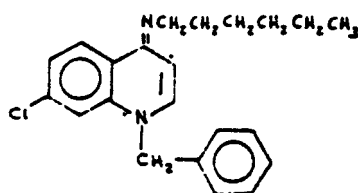
(1) Note. An example of a compound provided for herein is:



**159 Nitrogen, other than as nitro or nitroso, attached directly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 152. Compounds in which nitrogen, except as a member of the nitro (-NO<sub>2</sub>) or nitroso (-NO) group, is attached directly to the six-membered hetero ring of the quinoline ring system by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:



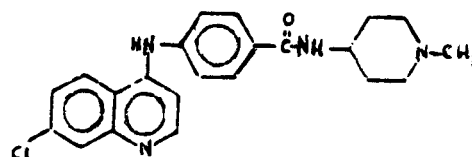
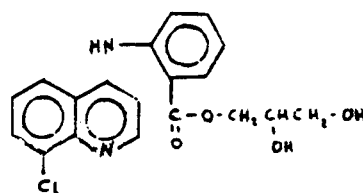
**160 Unsaturated carbocyclic ring bonded directly to the nitrogen:**

This subclass is indented under subclass 159. Compounds in which an unsaturated carbocyclic ring, i.e., a ring consisting of carbon and having at least one double bond between ring members, is bonded directly to the nitrogen.

**161 Having -C(=X)-, wherein X is chalcogen, bonded directly to the carbocyclic ring:**

This subclass is indented under subclass 160. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly to the carbocyclic ring.

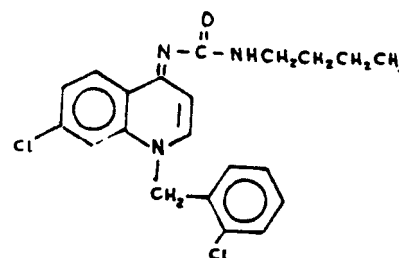
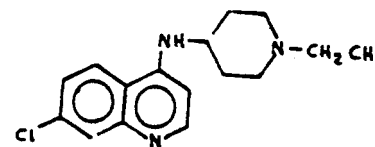
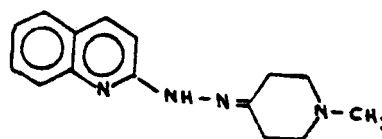
- (1) Note. Examples of compounds provided for herein are:



**162 Nitrogen attached indirectly to the six-membered hetero ring through the directly attached nitrogen by nonionic bonding:**

This subclass is indented under subclass 159. Compounds wherein nitrogen is attached indirectly to the six-membered hetero ring through the nitrogen which is directly attached by non-ionic bonding.

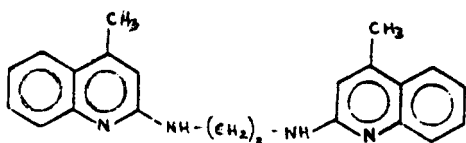
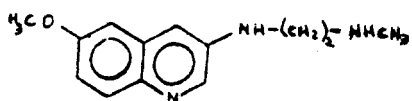
- (1) Note. Examples of compounds provided for herein are:



**163 Both nitrogens bonded directly to the same acyclic hydrocarbon group:**

This subclass is indented under subclass 162. Compounds in which both nitrogen atoms are bonded directly to the same acyclic hydrocarbon group.

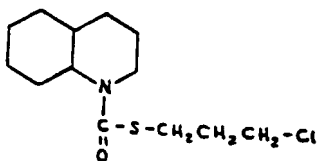
- (1) Note. Examples of compounds provided for herein are:



**164 Fully saturated quinolines:**

This subclass is indented under subclass 152. Compounds wherein the quinoline ring system is fully saturated, i.e., no double bonds between ring members.

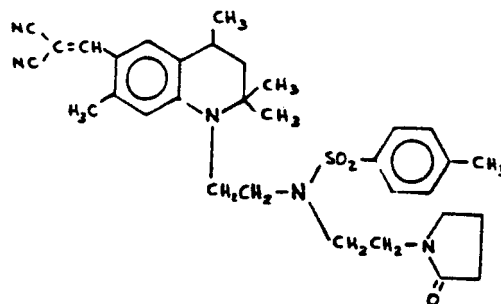
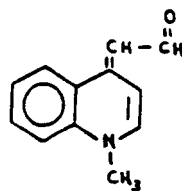
- (1) Note. An example of a compound provided for herein is:



**165 Single bond between 1,2-positions and single bond between 3,4-positions:**

This subclass is indented under subclass 152. Compounds in which there are single bonds between positions 1 and 2 and positions 3 and 4 of the quinoline ring system.

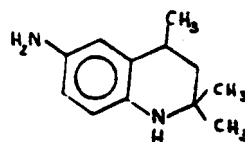
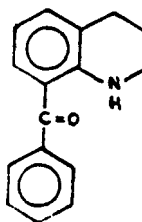
- (1) Note. Examples of compounds provided for herein are:



**166 The six-membered hetero ring is unsubstituted or alkyl substituted only:**

This subclass is indented under subclass 165. Compounds in which the six-membered hetero ring is unsubstituted or substituted by alkyl groups only.

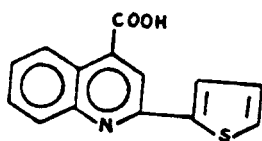
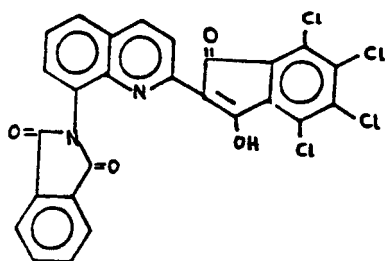
- (1) Note. Examples of compounds provided for herein are:



**167 Unsaturated hetero ring attached directly to the quinoline ring system by nonionic bonding:**

This subclass is indented under subclass 152. Compounds in which an unsaturated hetero ring is attached directly to the quinoline ring system by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:



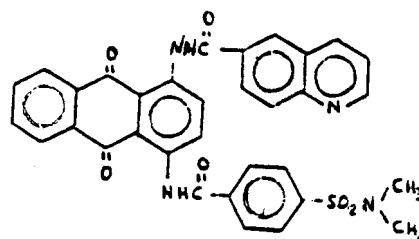
**168 Having -C(=X)-, wherein X is chalcogen, bonded directly to the quinoline ring system:**

Compounds under subclass 152 wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly to the quinoline ring system.

**169 Acyclic nitrogen bonded directly to the -C(-X)- group:**

This subclass is indented under subclass 168. Compound in which acyclic nitrogen is bonded directly to the group.

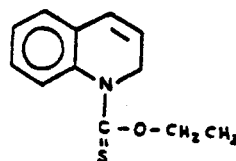
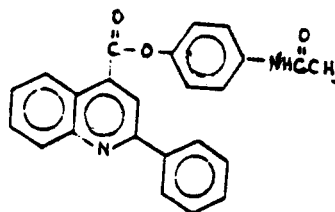
- (1) Note. An example of a compound provided for herein is:



**170 The -C(=X)- is part of -C(=X)X- group, wherein the X's are the same or diverse chalcogens:**

This subclass is indented under subclass 168. Compounds wherein the is part of a group, in which the X's are the same or diverse chalcogens (i.e., oxygen, sulfur, selenium, or tellurium).

- (1) Note. Examples of compounds provided for herein are:



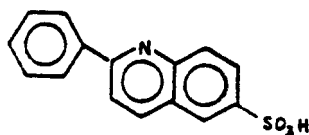
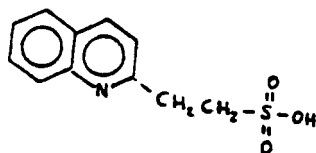
**171 Nitrogen, other than as nitro or nitroso, attached directly to the carbocyclic ring of the quinoline ring system by nonionic bonding:**

This subclass is indented under subclass 152. Compounds wherein nitrogen, except as a member of the nitro (-NO<sub>2</sub>) or nitroso (-NO) group, is attached directly to the carbocyclic ring of the quinoline ring system by nonionic bonding.

**172 Acyclic sulfur bonded directly to oxygen and directly or indirectly to the quinoline ring system by nonionic bonding:**

This subclass is indented under subclass 152. Compounds in which acyclic sulfur is bonded both directly to oxygen and directly or indirectly to the quinoline ring system by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:



**173 Unsaturated carbocyclic ring attached directly to the quinoline ring system by nonionic bonding (e.g., quinophthalones, etc.):**

This subclass is indented under subclass 152. Compounds in which an unsaturated carbocyclic ring is attached directly to the quinoline ring system by nonionic bonding.

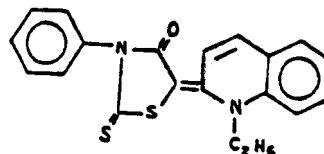
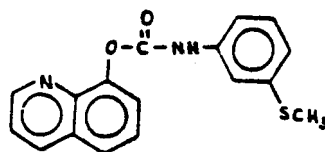
**174 Having -C(=X)-, wherein X is chalcogen, attached indirectly to the quinoline ring system by nonionic bonding:**

This subclass is indented under subclass 152. Compounds in which a group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is attached indirectly to the quinoline ring system by nonionic bonding.

**175 Nitrogen bonded directly to the -C(=X)-group:**

This subclass is indented under subclass 174. Compounds in which nitrogen is bonded directly to the group.

- (1) Note. Examples of compounds provided for herein are:



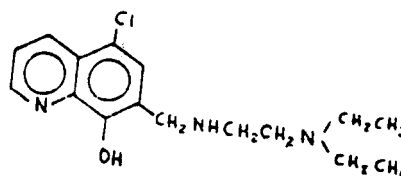
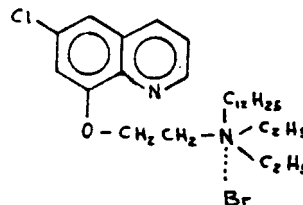
**176 Nitrogen, other than as nitro or nitroso, attached indirectly to the quinoline ring system by nonionic bonding:**

This subclass is indented under subclass 152. Compounds wherein nitrogen, except as a member of the nitro (-NO<sub>2</sub>) or nitroso (-NO) group, is attached indirectly to the quinoline ring system by nonionic bonding.

**177 Chalcogen attached directly to the carbocyclic ring of the quinoline ring system by nonionic bonding:**

This subclass is indented under subclass 176. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the carbocyclic ring of the quinoline ring system by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:



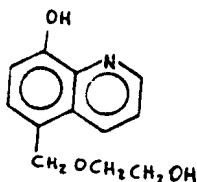
**178 Chalcogen attached directly to the carbocyclic ring of the quinoline ring system by non-ionic bonding:**

This subclass is indented under subclass 152. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the carbocyclic ring of the quinoline ring system by nonionic bonding.

**179 The chalcogen is in an -OH, -SH, -OM or -SM group (M is group IA or group IIA light metal):**

This subclass is indented under subclass 178. Compounds in which the chalcogen is part of an -OH, -SH, -OM or -SM group; wherein M is a Group IA or Group IIA metal having a specific gravity less than four.

- (1) Note. An example of a compound provided for herein is:



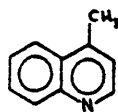
**180 Halogen or nitro attached directly or indirectly to the quinoline ring system by non-ionic bonding:**

This subclass is indented under subclass 152. Compounds in which halogen or a nitro group (-NO<sub>2</sub>) is attached directly or indirectly to the quinoline ring system by nonionic bonding.

**181 Quinolines which are unsubstituted or which are alkyl or alkenyl substituted only, or salt thereof:**

This subclass is indented under subclass 152. Compounds wherein the quinoline ring system is either unsubstituted or substituted by alkyl or alkenyl groups only, or salts thereof.

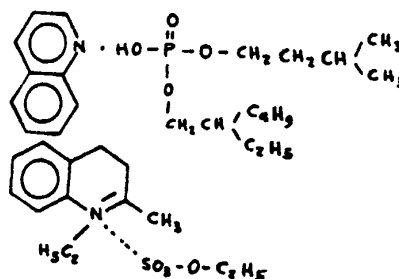
- (1) Note. An example of a compound provided for herein is:



**182 Addition salts:**

This subclass is indented under subclass 181. Compounds which are addition salts of (a) unsubstituted quinoline or (b) quinoline substituted by alkyl or alkenyl radicals only.

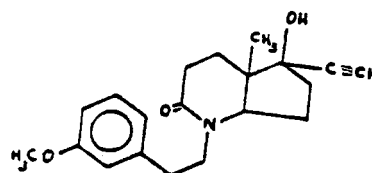
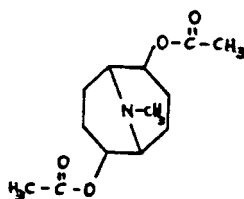
- (1) Note. Examples of compounds provided for herein are:



**183 Chalcogen bonded directly to ring carbon of the bicyclo ring system:**

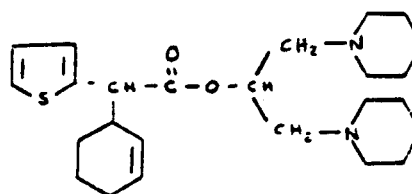
This subclass is indented under subclass 112. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to ring carbon of the bicyclo ring system.

- (1) Note. Examples of compounds provided for herein are:

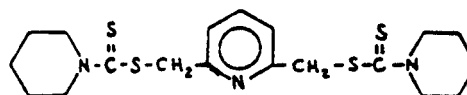


**184 Piperidines:**

This subclass is indented under subclass 1. Compounds in which the six-membered hetero ring, consisting of one nitrogen and five carbons, contains no double bonds between ring members, i.e., the piperidine ring.

**185 Process of forming a piperidine ring from a pyridine ring or from a partially hydrogenated pyridine ring:**

This subclass is indented under subclass 184. Processes wherein the piperidine ring is prepared by the hydrogenation of pyridine or partially hydrogenated pyridine.



- (1) Note. This subclass includes all hydrogenation processes for the formation of piperidine from pyridine or partially hydrogenated pyridine, whether the hydrogenation reaction is a single step process or merely one step in a multi-stage reaction process.

**188 Chalcogen attached directly to a ring carbon of a piperidine ring by nonionic bonding:**

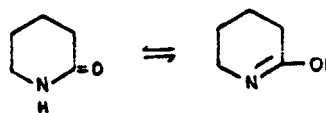
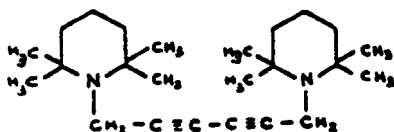
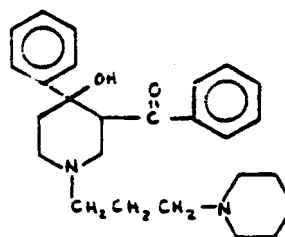
This subclass is indented under subclass 186. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to a piperidine ring by nonionic bonding.

- (1) Note. An example of a compound provided for herein is:

**186 Plural piperidine rings:**

This subclass is indented under subclass 184. Compounds which contain at least two piperidine rings.

- (1) Note. An example of a compound provided for herein is:

**187 Additional hetero ring containing:**

This subclass is indented under subclass 186. Compounds which contain an additional hetero ring.

- (1) Note. Examples of compounds provided for herein are:

SEE OR SEARCH THIS CLASS, SUBCLASS:

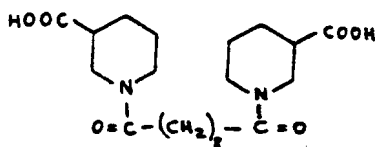
261, for tautomers of chalcogen double bonded directly to piperidine (i.e., chalcogen attached directly to pyridine or partially hydrogenated pyridine), e.g.,

**189 Having -C(=X)-, wherein X is chalcogen, bonded directly to a piperidine ring:**

This subclass is indented under subclass 186. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or

tellurium), is bonded directly to a piperidine ring.

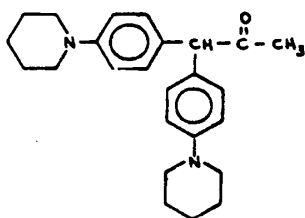
- (1) Note. An example of a compound provided for herein is:



**190 Having -C(=X)-, wherein X is chalcogen, attached indirectly to a piperidine ring by nonionic bonding:**

This subclass is indented under subclass 186. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is attached indirectly to a piperidine ring by nonionic bonding.

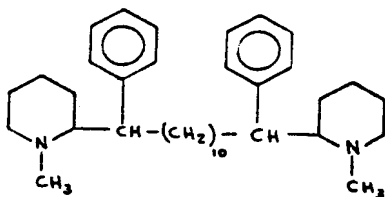
- (1) Note. An example of a compound provided for herein is:



**191 Carbocyclic ring containing:**

This subclass is indented under subclass 186. Compounds which contain a carbocyclic ring.

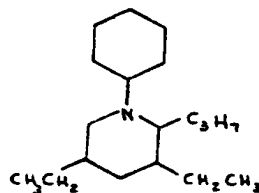
- (1) Note. An example of a compound provided for herein is:



**192 Additional ring containing:**

This subclass is indented under subclass 184. Compounds which contain an additional ring.

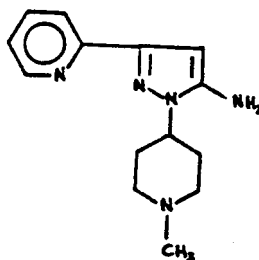
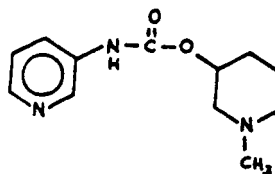
- (1) Note. An example of a compound provided for herein is:



**193 Pyridine ring or partially hydrogenated pyridine ring:**

This subclass is indented under subclass 192. Compounds in which the additional ring is a pyridine ring or partially hydrogenated pyridine ring.

- (1) Note. Examples of compounds provided for herein are:

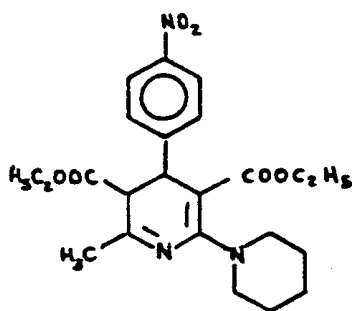


**194 Carbocyclic ring containing:**

This subclass is indented under subclass 193. Compounds which additionally contain a carbocyclic ring.

- (1) Note. An example of a compound provided for herein is:

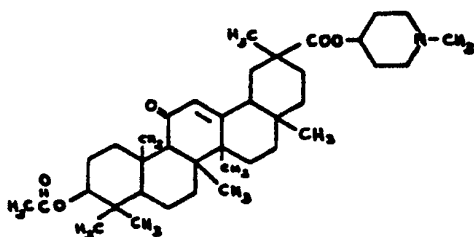




**195 The additional ring is one of the cyclos in a polycyclo ring system:**

This subclass is indented under subclass 192. Compounds in which the additional ring is one of the cyclos in a polycyclo ring system.

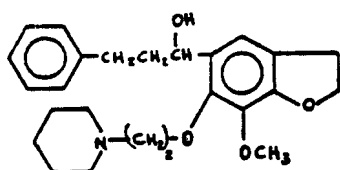
- (1) Note. An example of a compound provided for here in is:



**196 Hetero ring in the polycyclo ring system:**

This subclass is indented under subclass 195. Compounds wherein the polycyclo ring system contains a hetero ring.

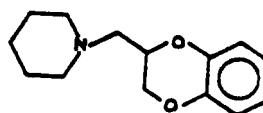
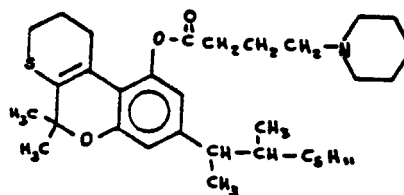
- (1) Note. An example of a compound provided for herein is:



**197 Plural ring hetero atoms in the polycyclo ring system:**

This subclass is indented under subclass 196. Compounds in which the polycyclo ring system contains at least two ring hetero atoms.

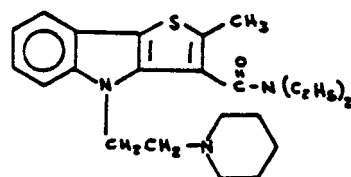
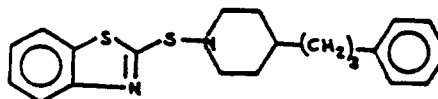
- (1) Note. Examples of compounds provided for herein are:



**198 Ring nitrogen in the polycyclo ring system:**

This subclass is indented under subclass 197. Compounds in which the polycyclo ring system contains a ring nitrogen.

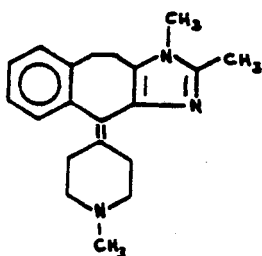
- (1) Note. Examples of compounds provided for herein are:



**199 Plural ring nitrogens in the polycyclo ring system:**

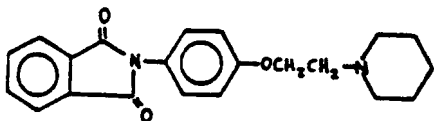
This subclass is indented under subclass 198. Compounds in which the polycyclo ring system contains at least two ring nitrogen atoms.

- (1) Note. Examples of compounds provided for herein are:

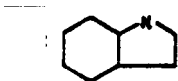


- 200 Ring nitrogen in the polycyclic ring system:**  
This subclass is indented under subclass 196. Compounds in which the polycyclic ring system contains a ring nitrogen.

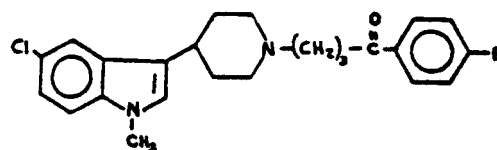
(1) Note. An example of a compound provided for herein is:



- 201 Bicyclo ring system which is indole (including hydrogenated):**  
This subclass is indented under subclass 200. Compounds wherein the polycyclic ring system is bicyclo and consists of the following basic structure in which the bonds between the ring members may be single or double bonds:

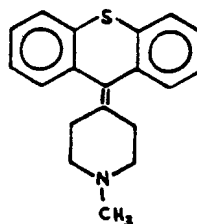


(1) Note. An example of a compound provided for herein is:



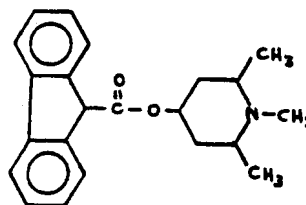
- 202 Ring sulfur in the polycyclic ring system:**  
This subclass is indented under subclass 196. Compounds in which the polycyclic ring system contains a ring sulfur.

(1) Note. An example of a compound provided for herein is:



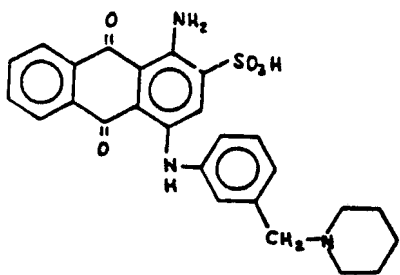
- 203 The polycyclic ring system is tricyclo-carbocyclic:**  
This subclass is indented under subclass 195. Compounds in which the polycyclic ring system consists of three carbocyclic rings.

(1) Note. An example of a compound provided for herein is:



- 204 Chalcogen bonded directly to the tricyclo-carbocyclic ring system:**  
This subclass is indented under subclass 203. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the tricyclo-carbocyclic ring system.

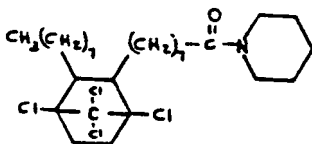
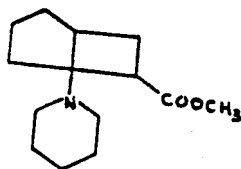
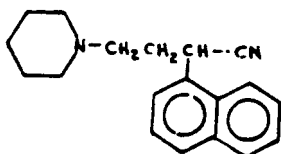
(1) Note. An example of a compound provided for herein is:



**205 The polycyclo ring system is bicyclo-carbocyclic:**

This subclass is indented under subclass 195. Compounds in which the polycyclo ring system consists of two carbocyclic rings.

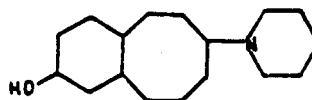
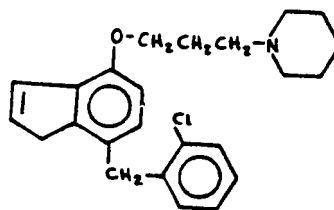
- (1) Note. Examples of compounds provided for herein are:



**206 Chalcogen bonded directly to the bicyclo-carbocyclic ring system:**

This subclass is indented under subclass 205. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the bicyclo-carbocyclic ring system.

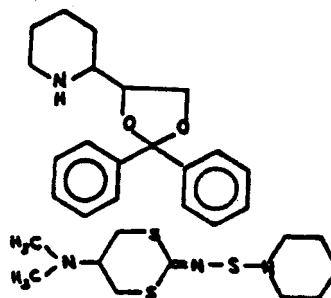
- (1) Note. Examples of compounds provided for herein are:



**207 The additional ring is a hetero ring:**

This subclass is indented under subclass 192. Compounds in which the additional ring is a hetero ring.

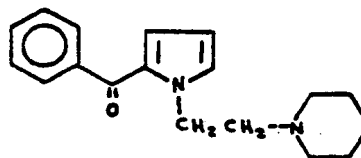
- (1) Note. Examples of compounds provided for herein are:



**208 The additional hetero ring has at least nitrogen as a ring hetero atom:**

This subclass is indented under subclass 207. Compounds in which the additional hetero ring contains ring nitrogen.

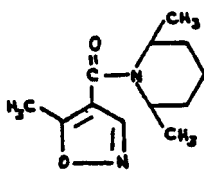
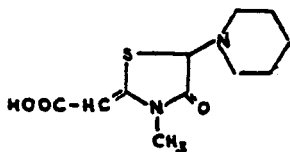
- (1) Note. An example of a compound provided for herein is:



**209 Ring sulfur or ring oxygen in the additional hetero ring:**

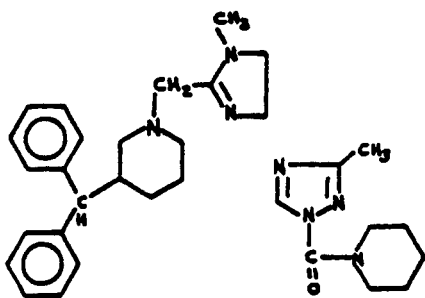
This subclass is indented under subclass 208. Compounds in which the additional hetero ring additionally contains ring sulfur or ring oxygen.

- (1) Note. Examples of compounds provided for herein are:

**210 Plural ring nitrogens in the additional hetero ring:**

This subclass is indented under subclass 208. Compounds in which the additional hetero ring contains at least two ring nitrogens.

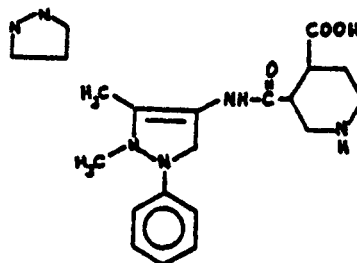
- (1) Note. Examples of compounds provided for herein are:

**211 1,2-diazole (including hydrogenated):**

This subclass is indented under subclass 210. Compounds wherein the additional hetero ring consists of two ring nitrogens in adjacent positions and three ring carbons; i.e.,

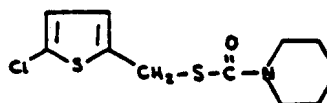


- (1) Note. An example of a compound provided for herein is:

**212 The additional hetero ring consists of one sulfur and four carbons:**

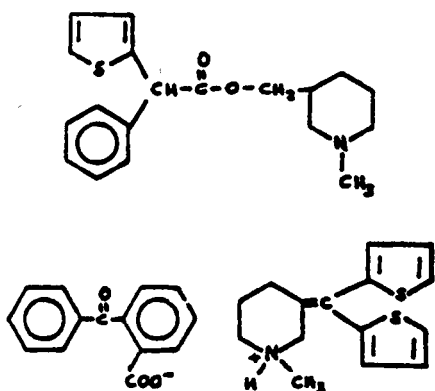
This subclass is indented under subclass 207. Compounds in which the additional hetero ring consists of one ring sulfur and four ring carbons.

- (1) Note. An example of a compound provided for herein is:

**213 Carbocyclic ring containing:**

This subclass is indented under subclass 212. Compounds which contain a carbocyclic ring.

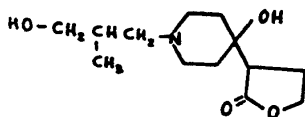
- (1) Note. Examples of compounds provided for herein are:



**214 The additional hetero ring consists of one oxygen and four carbons:**

This subclass is indented under subclass 207. Compounds in which the additional hetero ring consists of one oxygen and four carbons.

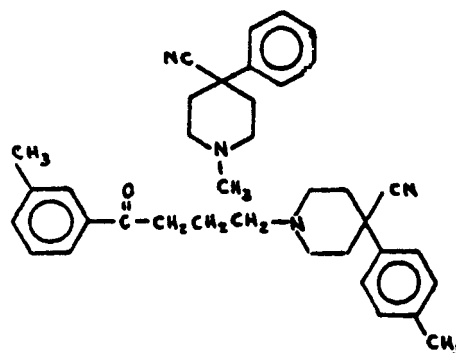
- (1) Note. An example of a compound provided for herein is:



**215 Cyano bonded directly to the piperidine ring:**

This subclass is indented under subclass 192. Compounds in which a -CbN groups is bonded directly to the piperidine ring.

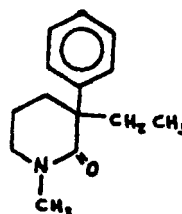
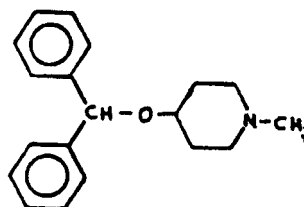
- (1) Note. Examples of compounds provided for herein are:



**216 Chalcogen bonded directly to ring carbon of the piperidine ring:**

This subclass is indented under subclass 192. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the piperidine ring.

- (1) Note. Examples of compounds provided for herein are:



SEE OR SEARCH THIS CLASS, SUBCLASS:

- 290, for tautomers of chalcogen double bonded directly to piperidine (i.e., chalcogen attached directly to pyri-

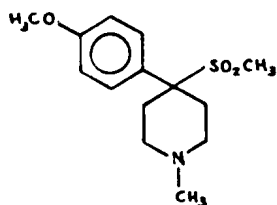
dine or partially hydrogenated pyridine), e.g.,



**217 Chalcogen and a carbocyclic ring bonded directly at 4-position:**

This subclass is indented under subclass 216. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) and a carbocyclic ring are bonded directly to the piperidine ring at the 4-position.

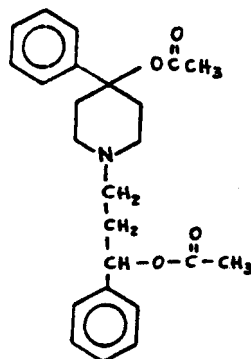
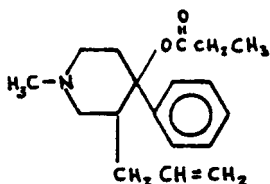
- (1) Note. An example of a compound provided for herein is:



**218 The chalcogen, X, is part of a -C(=X)X-group, wherein the X's are the same or diverse chalcogens:**

This subclass is indented under subclass 217. Compounds in which the chalcogen, X, is part of a group, wherein the X's are the same or diverse chalcogens (i.e., oxygen, sulfur, selenium, or tellurium).

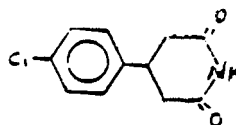
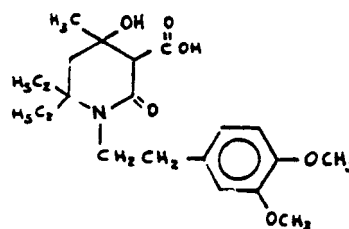
- (1) Note. Examples of compounds provided for herein are:



**219 Plural chalcogens bonded directly to ring carbons of the piperidine ring:**

This subclass is indented under subclass 216. Compounds in which at least two chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are bonded directly to ring carbons of the piperidine ring.

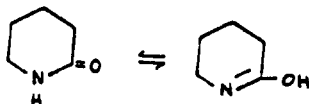
- (1) Note. Examples of compounds provided for herein are:



SEE OR SEARCH THIS CLASS, SUBCLASS:

- 296, for tautomers of chalcogen double bonded directly to piperidine (i.e., chalcogen attached directly to pyri-

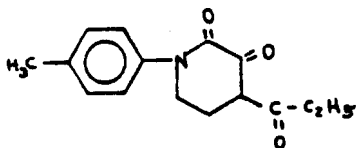
dine or partially hydrogenated pyridine), e.g.,



**220 Having -C(=X)-, wherein X is chalcogen, attached directly or indirectly to the piperidine ring by nonionic bonding:**

This subclass is indented under subclass 219. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is attached directly, or indirectly to the piperidine ring by nonionic bonding.

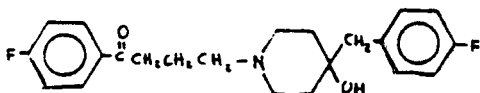
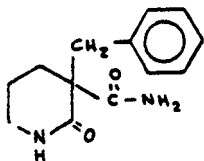
- (1) Note. An example of a compound provided for here is:



**221 Having -C(=X), wherein X is chalcogen, attached directly or indirectly to the piperidine ring by nonionic bonding:**

This subclass is indented under subclass 216. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is attached directly or indirectly to the piperidine ring by nonionic bonding.

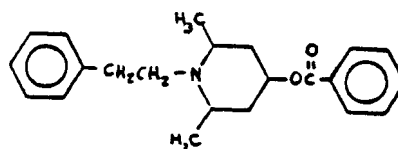
- (1) Note. Examples of compounds provided for herein are:



**222 The -C(=X)- group and the piperidine ring are bonded directly to the same chalcogen:**

This subclass is indented under subclass 221. Compounds wherein the group and the piperidine ring are each bonded directly to the same chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) atom.

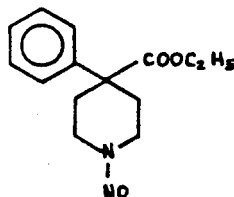
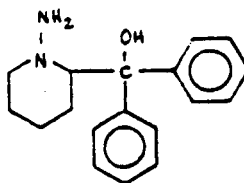
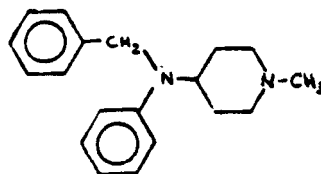
- (1) Note. An example of a compound provided for herein is:



**223 Nitrogen attached directly to the piperidine ring by nonionic bonding:**

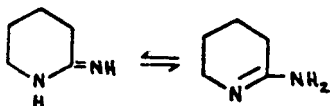
This subclass is indented under subclass 192. Compounds in which nitrogen is attached directly to the piperidine ring by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:



SEE OR SEARCH THIS CLASS, SUB-CLASS:

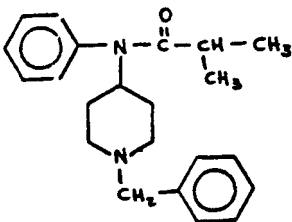
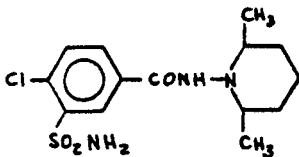
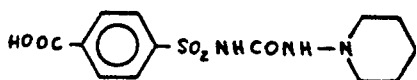
304+, for tautomers of nitrogen double bonded directly to piperidine (i.e., nitrogen attached directly to pyridine or partially hydrogenated pyridine), e.g.,



**224 Acyclic nitrogen bonded directly to a -C(=X)- group, wherein X is chalcogen:**

This subclass is indented under subclass 223. Compounds wherein acyclic nitrogen is bonded directly to a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

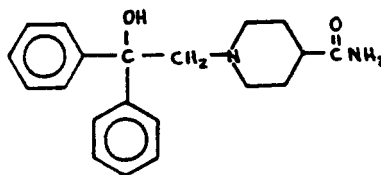
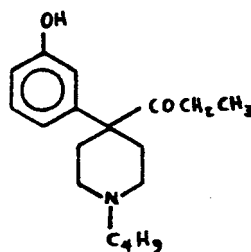
(1) Note. Examples of compounds provided for herein are:



**225 Having -C(=X)-, wherein X is chalcogen, bonded directly to the piperidine ring:**

This subclass is indented under subclass 192. Compounds in which a group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly to the piperidine ring.

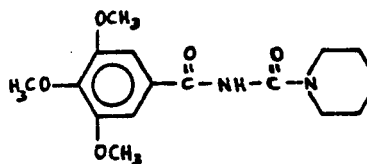
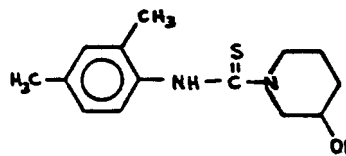
(1) Note. Examples of compounds provided for herein are:



**226 At 1-position:**

This subclass is indented under subclass 225. Compounds wherein the group is bonded directly to the piperidine ring at the 1-position, i.e., to the nitrogen atom of the ring.

(1) Note. Examples of compounds provided for herein are:

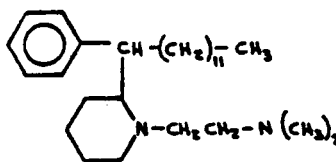
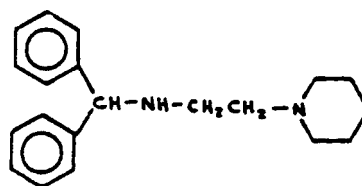
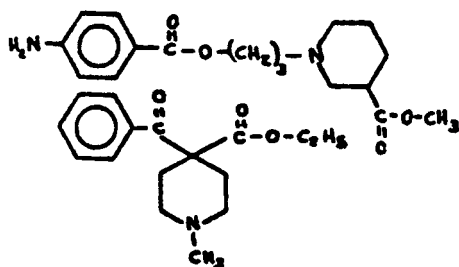


**227 The -C(=X)- is part of a -C(=X)X- group, wherein the X's are the same or diverse chalcogens:**

This subclass is indented under subclass 225. Compounds wherein the is part of a group, in which the X's are the same, or diverse chalcogens (i.e., oxygen, sulfur, selenium, or tellurium).



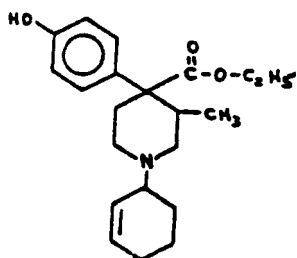
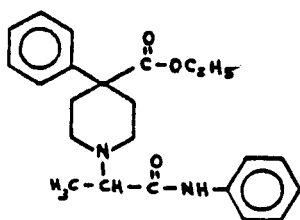
- (1) Note. Examples of compounds provided for herein are:



**228 Carbocyclic ring bonded directly at 4-position:**

This subclass is indented under subclass 227. Compounds in which a carbocyclic ring is bonded directly to the piperidine ring at the 4-position.

- (1) Note. Examples of compounds provided for herein are:



**229 Nitrogen attached indirectly to the piperidine ring by nonionic bonding:**

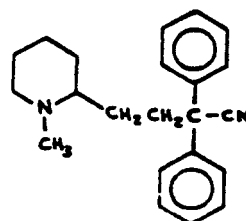
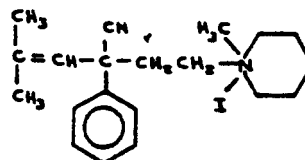
This subclass is indented under subclass 192. Compounds in which nitrogen is attached indirectly to the piperidine ring by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:

**230 Cyano attached indirectly to the piperidine ring by nonionic bonding:**

This subclass is indented under subclass 229. Compounds in which the -C N group is attached indirectly to the piperidine ring by nonionic bonding.

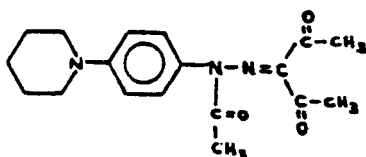
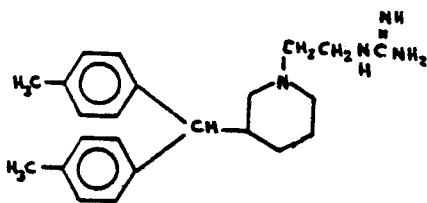
- (1) Note. Examples of compounds provided for herein are:



**231 Plural acyclic nitrogens bonded directly to the same carbon or single bonded directly to each other:**

This subclass is indented under subclass 229. Compounds containing at least two acyclic nitrogen atoms which are bonded directly to the same carbon or single bonded directly to each other.

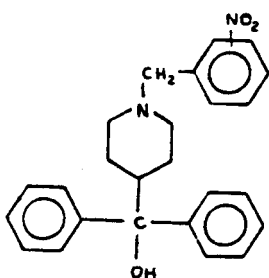
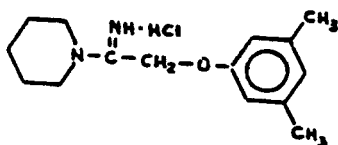
- (1) Note. Examples of compounds provided for herein are:



**232 Chalcogen attached indirectly to the piperidine ring by nonionic bonding:**

This subclass is indented under subclass 229. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the piperidine ring by nonionic bonding.

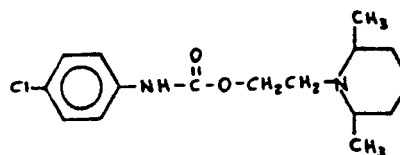
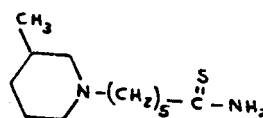
- (1) Note. Examples of compounds provided for herein are:



**233 Acyclic nitrogen bonded directly to A-C(=X)- group, wherein X is chalcogen:**

This subclass is indented under subclass 232. Compounds containing an acyclic nitrogen which is bonded directly to a group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

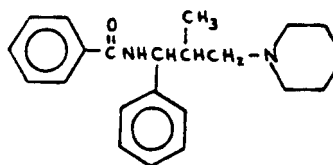
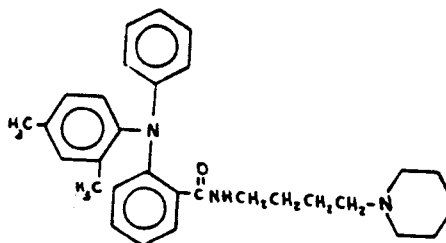
- (1) Note. Examples of compounds provided for herein are:



**234 Plural carbocyclic rings containing:**

This subclass is indented under subclass 233. Compounds which contain at least two carbocyclic rings.

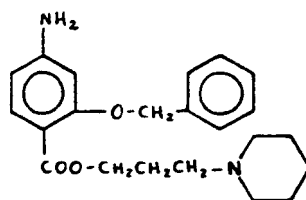
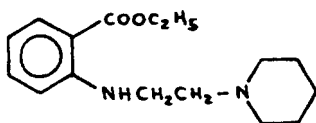
- (1) Note. Examples of compounds provided for herein are:



**235 The chalcogen, X, is in a -C(=X)- group:**

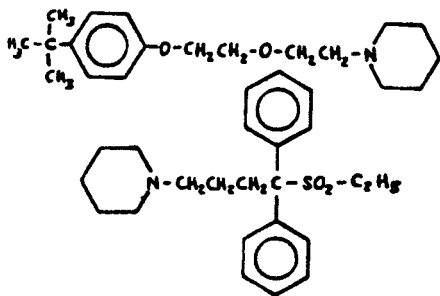
This subclass is indented under subclass 232. Compounds in which the chalcogen, X (i.e., oxygen, sulfur, selenium, or tellurium), is in a group.

- (1) Note. Examples of compounds provided for herein are:

**236 Chalcogen attached indirectly to the piperidine ring by nonionic bonding:**

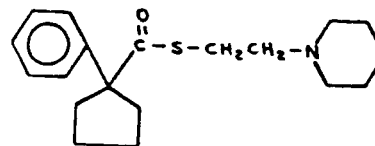
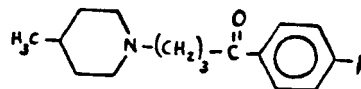
This subclass is indented under subclass 192. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the piperidine ring by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:

**237 The chalcogen, X, is in a -C(=X)- group:**

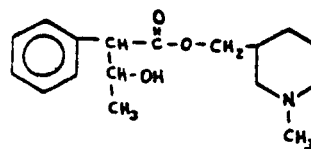
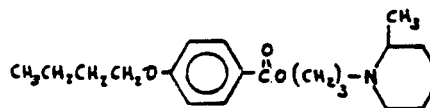
This subclass is indented under subclass 236. Compounds in which the chalcogen, X (i.e., oxygen, sulfur, selenium, or tellurium), is in a group.

- (1) Note. Examples of compounds provided for herein are:

**238 The -C(=X)- is part of a -C(=X)X- group, wherein the X's are the same or diverse chalcogens:**

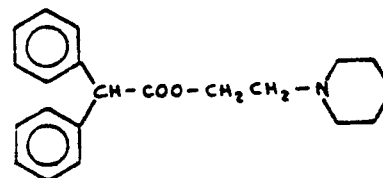
This subclass is indented under subclass 237. Compounds wherein the is part of a group, in which the X's are the same, or diverse chalcogens (i.e., oxygen, sulfur, selenium, or tellurium).

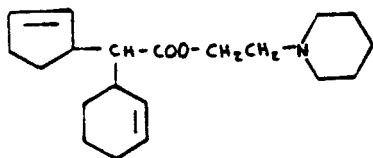
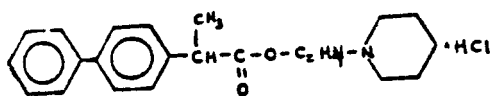
- (1) Note. Examples of compounds provided for herein are:

**239 Plural carbocyclic rings containing:**

This subclass is indented under subclass 238. Compounds which contain at least two carbocyclic rings.

- (1) Note. Examples of compounds provided for herein are:

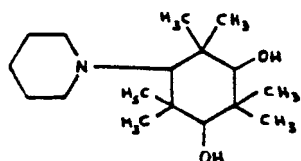
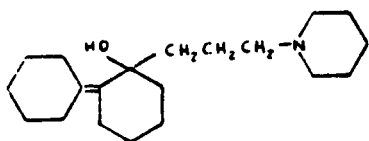




**240 The chalcogen is in an -OH or -OM group (M is group IA or group IIA light metal):**

This subclass is indented under subclass 236. Compounds in which the chalcogen is in an -OH or -OM group, wherein M is a Group IA or Group IIA metal having a specific gravity less than four.

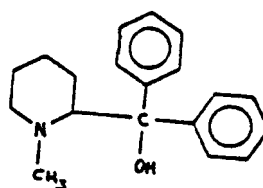
- (1) Note. Examples of compounds provided for herein are:



**241 The -OH or -OM is bonded to an acyclic carbon, which carbon is bonded directly to two rings:**

This subclass is indented under subclass 240. Compounds where in the -OH or -OM group is bonded to an acyclic carbon atom which is bonded directly to two rings.

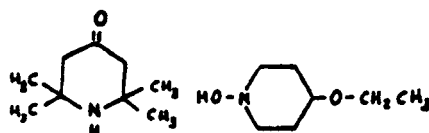
- (1) Note. An example of a compound provided for herein is:



**242 Chalcogen bonded directly to ring carbon of the piperidine ring:**

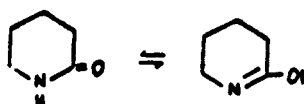
This subclass is indented under subclass 184. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the piperidine ring.

- (1) Note. Examples of compounds provided for herein are:



SEE OR SEARCH THIS CLASS, SUBCLASS:

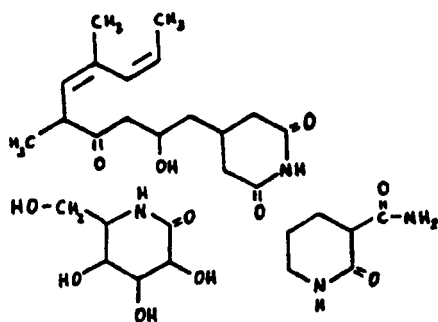
- 290, for tautomers of chalcogen double bonded directly to piperidine (i.e., chalcogen attached directly to pyridine or partially hydrogenated pyridine), e.g.,



**243 At 2-position:**

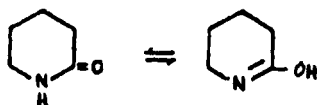
This subclass is indented under subclass 242. Compounds in which the chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded to the 2-position of the piperidine ring.

- (1) Note. Examples of compounds provided for herein are:



SEE OR SEARCH THIS CLASS, SUB-CLASS:

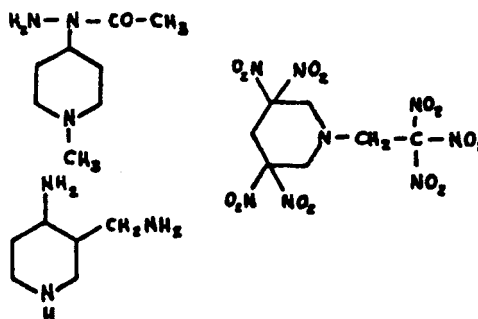
290, for tautomers of chalcogen double bonded directly to piperidine (i.e., chalcogen attached directly to pyridine or partially hydrogenated pyridine), e.g.,



**244 Nitrogen attached directly to the piperidine ring by nonionic bonding:**

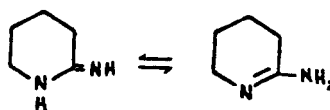
This subclass is indented under subclass 184. Compounds wherein nitrogen is attached directly to the piperidine ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:



SEE OR SEARCH THIS CLASS, SUB-CLASS:

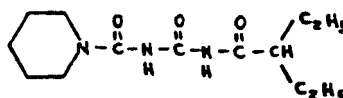
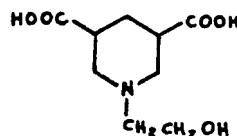
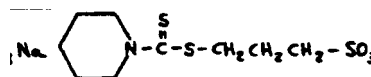
304+, for tautomers of nitrogen double bonded directly to piperidine (i.e., nitrogen attached directly to pyridine or partially hydrogenated pyridine), e.g.,



**245 Having -C(=X)-, wherein X is chalcogen:**

This subclass is indented under subclass 184. Compounds which contain a group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium, bonded directly to the piperidine ring.

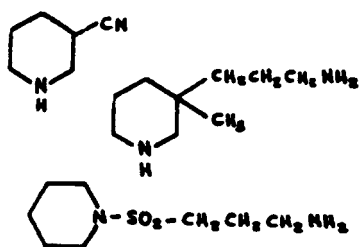
(1) Note. Examples of compounds provided for herein are:



**246 Nitrogen attached indirectly to the piperidine ring by nonionic bonding:**

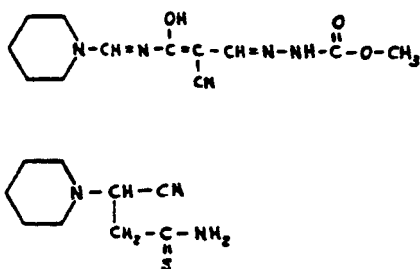
This subclass is indented under subclass 184. Compounds in which nitrogen is attached indirectly to the piperidine ring by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:

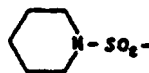
**247 Acyclic nitrogen bonded directly to A-C(=X)- group, wherein X is chalcogen:**

This subclass is indented under subclass 246. Compounds containing an acyclic nitrogen which is bonded directly to a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

- (1) Note. Examples of compounds provided for herein are:

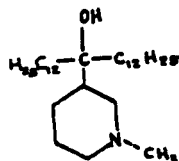
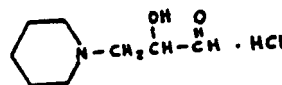
**248 Chalcogen attached indirectly to the piperidine ring by nonionic bonding:**

This subclass is indented under subclass 184. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the piperidine ring by nonionic bonding.



Aliphatic

- (1) Note. A compound of the type would be provided for herein rather than above in subclasses 242+ as the chalcogen which is bonded directly to the six-membered hetero ring is attached to the ring nitrogen rather than a ring carbon. Placement is based on the oxygen which is attached indirectly, i.e., through a sulfur atom, to the six-membered hetero ring.
- (2) Note. Additional examples of compounds provided for herein are:

**249 Process of forming partially hydrogenated pyridine ring:**

This subclass is indented under subclass 1. Compounds whereby a partially hydrogenated pyridine ring is formed, i.e., a six-membered hetero ring consisting of one nitrogen and five carbons having one or two double bonds between the ring members.

- (1) Note. Included herein are processes of forming the partially hydrogenated pyridine ring by any means, e.g., ring closure, ring expansion, dehydrogenation, hydrogenation, etc.

**250 Process of forming pyridine ring:**

This subclass is indented under subclass 1. Processes of forming the pyridine ring, i.e., six-membered hetero ring consisting of one nitro-

gen and five carbons having three double bonds between the ring members.

- (1) Note. Included here are processes of forming the pyridine ring by any means, e.g., ring closure, ring expansion, dehydrogenation, etc.

**251 The pyridine ring is unsubstituted or hydrocarbyl substituted only:**

This subclass is indented under subclass 250. Processes wherein the pyridine ring which is formed is either unsubstituted or substituted by hydrocarbon groups only.

- (1) Note. Hydrocarbon groups consist of carbon and hydrogen only. A substituent containing any other atom would not be provided for herein.

**252 Starting materials include a hetero ring having at least nitrogen as a ring hetero atom (e.g., starting materials include a piperidine ring, etc.):**

This subclass is indented under subclass 251. Processes wherein the starting materials include a compound having a hetero ring which contains a ring nitrogen.

**253 Starting materials include a hydrocarbon:**

This subclass is indented under subclass 251. Processes which utilize hydrocarbons as starting materials.

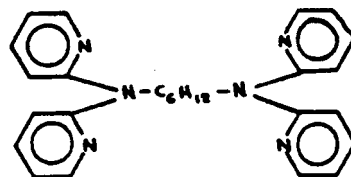
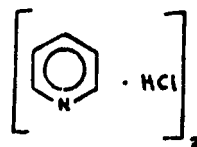
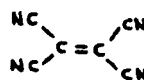
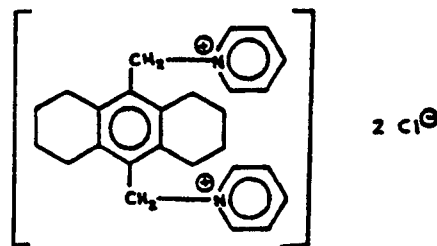
**254 Starting Materials Include an Acyclic Hydrocarbyl Ether or an Acyclic Hydrocarbyl Alcohol:**

This subclass is indented under subclass 251. Processes which utilize an acyclic hydrocarbyl ether or an acyclic hydrocarbyl alcohol as a starting material.

**255 Plural pyridine or partially hydrogenated pyridine rings:**

This subclass is indented under subclass 1. Compounds which contain at least two of the six-membered hetero rings, each consisting of one nitrogen and five carbons and having at least one double bond between ring members, i.e., pyridine or partially hydrogenated pyridine rings.

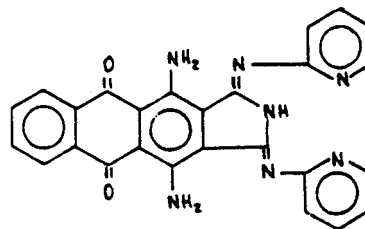
- (1) Note. Examples of compounds provided for herein are:

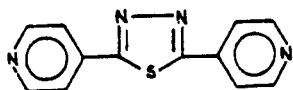
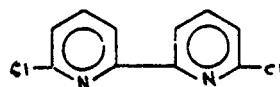
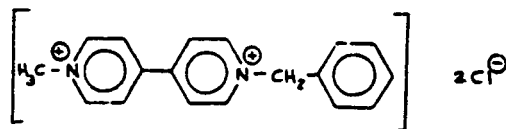
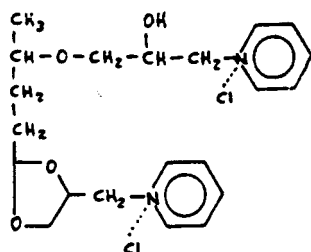


**256 Additional hetero ring containing:**

This subclass is indented under subclass 255. Compounds which contain an additional hetero ring.

- (1) Note. Examples of compounds provided for herein are:

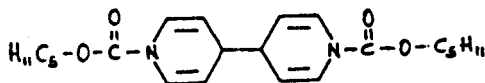
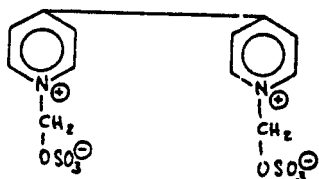




**257 Pyridine or partially hydrogenated pyridine rings are bonded directly to each other:**

This subclass is indented under subclass 255. Compounds wherein the pyridine or partially hydrogenated pyridine rings are bonded directly to each other.

- (1) Note. Examples of compounds provided for herein are:



**258 Halogen containing or process utilizing  
halogen or halogen containing compound:**

This subclass is indented under subclass 257. compounds which contain halogen or processes which utilize halogen or a halogen containing compound in the formation, purification, or recovery of a compound wherein the plural pyridine or partially hydrogenated pyridine rings are bonded directly to each other.

- (1) Note. Examples of compounds provided for herein are:

**259 Metal containing catalyst utilized:**

This subclass is indented under subclass 258. Processes utilizing a metal or metal containing compound as catalyst.

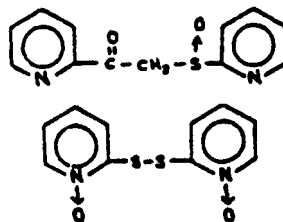
**260 Metal containing catalyst utilized:**

This subclass is indented under subclass 257. Processes utilizing a metal or metal containing compound as catalyst.

**261 Chalcogen bonded directly to ring carbon of pyridine or partially hydrogenated pyridine ring:**

This subclass is indented under subclass 255. Compounds containing chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) which is bonded directly to a ring carbon of a pyridine or partially hydrogenated pyridine ring.

- (1) Note. Examples of compounds provided for herein are:

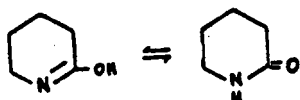


SEE OR SEARCH THIS CLASS, SUB-CLASS:

188, for tautomers of chalcogen attached directly to pyridine or partially hydrogenated pyridine (i.e., chalcogen dou-



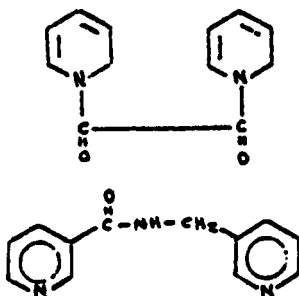
ble bonded directly to piperidine),  
e.g.,



- 262 Having  $-C(=X)-$ , wherein X is chalcogen, bonded directly to pyridine or partially hydrogenated pyridine ring:

This subclass is indented under subclass 255. Compounds in which a group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), bonded directly to pyridine or partially hydrogenated pyridine ring.

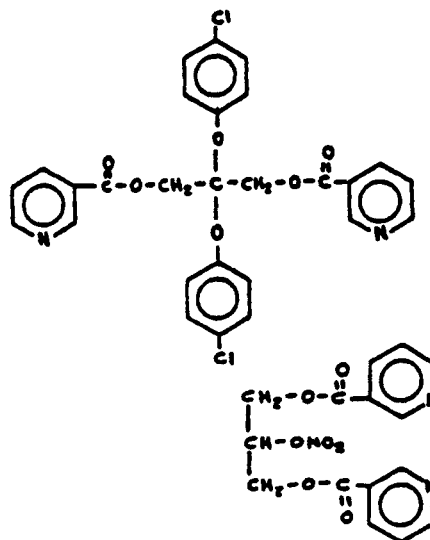
- (1) Note. Examples of compounds provided for herein are:



- 263 The  $-C(=X)-$  is part of a  $-C(=X)X-$  group, wherein the X's are the same or diverse chalcogens:

This subclass is indented under subclass 262. Compounds wherein the is part of a group, in which the X's are the same or diverse chalcogens (i.e., oxygen, sulfur, selenium, or tellurium).

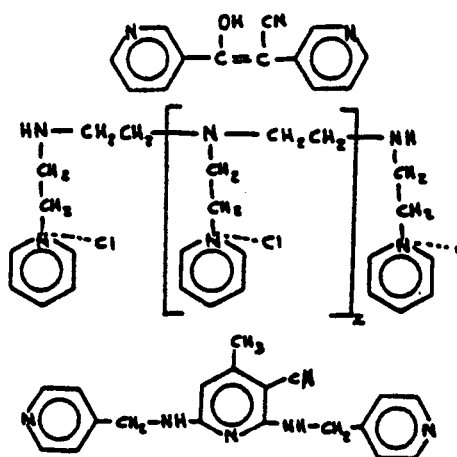
- (1) Note. Examples of compounds provided for herein are:



- 264 Acyclic nitrogen attached directly or indirectly to pyridine or partially hydrogenated pyridine ring by nonionic bonding:

This subclass is indented under subclass 255. Compounds in which acyclic nitrogen is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

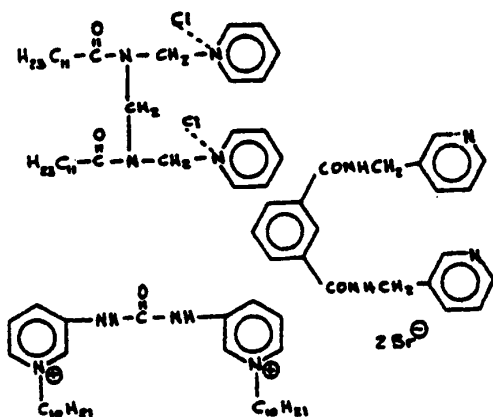
- (1) Note. Examples of compounds provided for herein are:



**265 Having -C(=X)-, wherein X is chalcogen, bonded directly to the acyclic nitrogen:**

This subclass is indented under subclass 264. Compounds in which the acyclic nitrogen is bonded directly to a group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

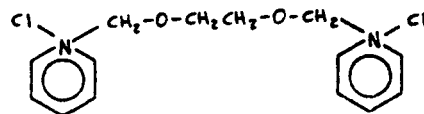
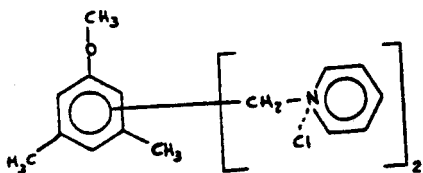
- (1) Note. Examples of compounds provided for herein are:



**266 Chalcogen attached indirectly to pyridine or partially hydrogenated pyridine ring by nonionic bonding:**

This subclass is indented under subclass 255. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to a pyridine or partially hydrogenated pyridine ring by nonionic bonding.

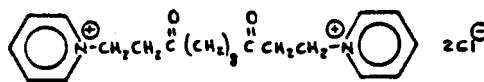
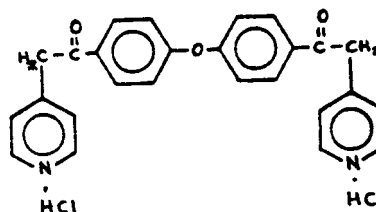
- (1) Note. Examples of compounds provided for herein are:



**267 The chalcogen, X, is in a -C(=X)-group:**

This subclass is indented under subclass 266. Compounds wherein the chalcogen, X (i.e., oxygen, sulfur, selenium, or tellurium), is in a group.

- (1) Note. Examples of compounds provided for herein are:



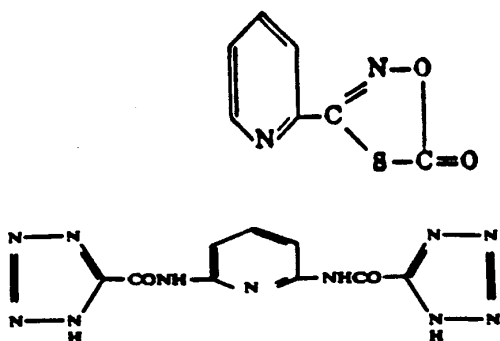
**268.1 Additional hetero ring containing:**

This subclass is indented under subclass 1. Compounds which contain an additional hetero ring.

**268.4 The additional hetero ring is five-membered having two or more ring hetero atoms of which at least one is nitrogen:**

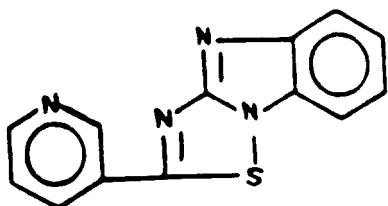
This subclass is indented under subclass 268.1. Compounds wherein the additional hetero ring is five-membered and has two or more ring hetero atoms of which at least one is nitrogen.

- (1) Note. Examples of compounds provided for herein are:

**268.7 Thiadiazoles (including hydrogenated):**

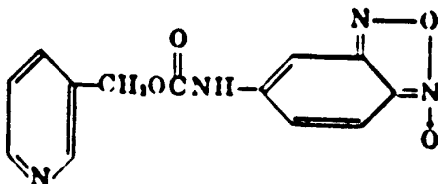
This subclass is indented under subclass 268.4. Compounds in which the five-membered hetero ring consists of two ring nitrogens, one ring sulfur, and two ring carbons.

- (1) Note. An example of a compound provided for herein is:

**269.1 Oxadiazoles (including hydrogenated):**

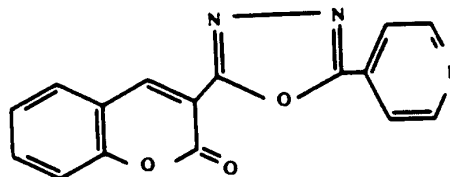
This subclass is indented under subclass 268.4. Compounds in which the five-membered hetero ring consists of two ring nitrogens, one ring oxygen, and two ring carbons.

- (1) Note. An example of a compound provided for herein is:

**269.4 Oxadiazole ring bonded directly to the six-membered hetero ring:**

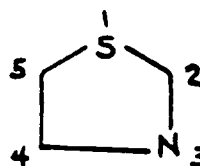
This subclass is indented under subclass 269.1. Compounds wherein the six-membered hetero ring is bonded directly to the oxadiazole ring.

- (1) Note. An example of a compound provided for herein is:

**269.7 1,3-thiazoles (including hydrogenated):**

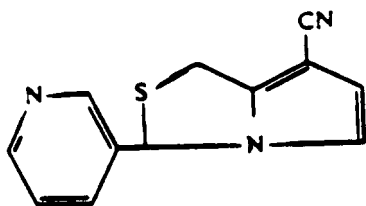
This subclass is indented under subclass 268.4. Compounds in which the five-membered hetero ring has sulfur in the 1-position, nitrogen in the 3-position, and carbons in the remaining three positions.

- (1) Note. This subclass provides for compounds containing the following ring which may have double bonds between its members:

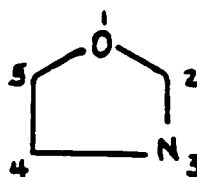
**270.1 Polycyclo ring system having the 1,3-thiazole ring as one of the cyclos:**

This subclass is indented under subclass 269.7. Compounds wherein the 1,3-thiazole ring is one of the cyclos of a polycyclo ring system.

- (1) Note. An example of a compound provided for herein is:



which may have double bonds between its members:



**270.4 1,3-thiazole ring bonded directly to the six-membered hetero ring:**

This subclass is indented under subclass 269.7. Compounds wherein the six-membered hetero ring is bonded directly to the 1,3-thiazole ring.

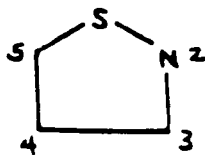
**270.7 Nitrogen attached directly to the 1,3-thiazole ring by nonionic bonding:**

This subclass is indented under subclass 269.7. Compounds wherein the 1,3-thiazole ring is attached directly to nitrogen by nonionic bonding.

**271.1 1,2-thiazoles (including hydrogenated):**

This subclass is indented under subclass 268.4. Compounds in which the five-membered hetero ring has sulfur in the 1-position, nitrogen in the 2-position, and carbons in the remaining three positions.

- (1) Note. This subclass provides for compounds containing the following ring which may have double bonds between its members:



**271.4 1,3-oxazoles (including hydrogenated):**

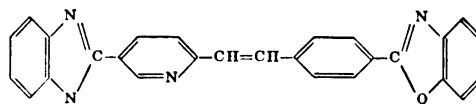
This subclass is indented under subclass 268.4. Compounds in which the five-membered hetero ring has oxygen in the 1-position, nitrogen in the 3-position, and carbons in the remaining three positions.

- (1) Note. This subclass provides for compounds containing the following ring

**271.7 Polycyclo ring system having the 1,3-oxazole ring as one of the cyclos:**

This subclass is indented under subclass 271.4. Compounds wherein the 1,3-oxazole ring is one of the cyclos of a polycyclo ring system.

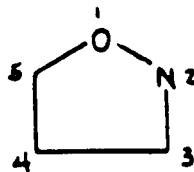
- (1) Note. An example of a compound provided for herein is:



**272.1 1,2-oxazoles (including hydrogenated):**

This subclass is indented under subclass 268.4. Compounds in which the five-membered hetero ring has oxygen in the 1-position, nitrogen in the 2-position, and carbons in the remaining three positions.

- (1) Note. This subclass provides for compounds containing the following ring which may have double bonds between its members:



**272.4 1,2,4-triazoles (including hydrogenated):**

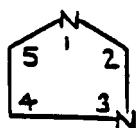
This subclass is indented under subclass 268.4. Compounds in which the five-membered hetero ring has nitrogens in the 1,2 and 4-positions and carbons in the remaining two positions.

- (1) Note. This subclass provides for compounds containing the following ring which may have double bonds between its members:

**272.7 1,3-diazoles (including hydrogenated):**

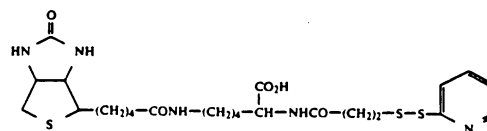
This subclass is indented under subclass 268.4. Compounds in which the five-membered hetero ring has nitrogens in the 1- and 3-positions and carbons in the remaining three positions.

- (1) Note. This subclass provides for compounds containing the following ring which may have double bonds between its members:

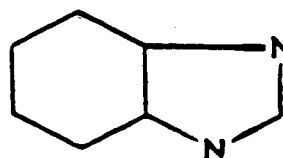
**273.1 Polycyclo ring system having the 1,3-diazole ring as one of the cyclos:**

This subclass is indented under subclass 272.7. Compounds wherein the 1,3-diazole ring is one of the cyclos of a polycyclo ring system.

- (1) Note. An example of a compound provided for herein is:

**273.4 Bicyclo ring system which is benzimidazole (including hydrogenated):**

This subclass is indented under subclass 273.1. Compounds wherein the polycyclo ring system is bicyclo and consists of the following basic structure in which the bonds between the ring members may be single or double bonds:

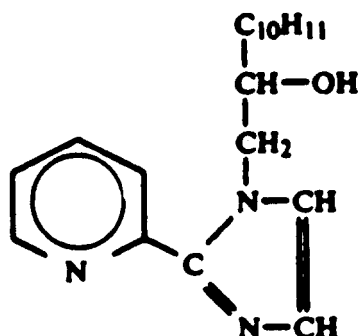
**273.7 Chalcogen bonded directly to a ring carbon of the 1,3-diazole ring:**

This subclass is indented under subclass 273.4. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the 1,3-diazole ring.

**274.1 The 1,3-diazole ring is bonded directly to the six-membered hetero ring:**

This subclass is indented under subclass 272.7. Compounds wherein the six-membered hetero ring is bonded directly to the 1,3-diazole ring.

- (1) Note. An example of a compound provided for herein is:



**274.4 Chalcogen attached directly to the 1,3-diazole ring by nonionic bonding:**

This subclass is indented under subclass 272.7. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the 1,3-diazole ring by nonionic bonding.

**274.7 Nitrogen or -C(=X)-, wherein X is chalcogen, attached directly to the 1,3-diazole ring by nonionic bonding:**

This subclass is indented under subclass 272.7. Compounds in which nitrogen or -C(=X)-, wherein X is chalcogen (i.e., oxygen, sulfur, selenium or tellurium), is attached directly to the 1,3-diazole ring by nonionic bonding.

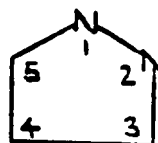
**275.1 Chalcogen attached indirectly to the 1,3-diazole ring by acyclic nonionic bonding:**

This subclass is indented under subclass 272.7. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the 1,3-diazole ring by acyclic nonionic bonding.

**275.4 1,2-diazoles (including hydrogenated):**

This subclass is indented under subclass 268.4. Compounds in which the five-membered hetero ring has nitrogens in the 1- and 2-positions and carbons in the remaining three positions.

- (1) Note. This subclass provides for compounds containing the following ring which may have double bonds between its members:



**275.7 Polycyclo ring system having the 1,2-diazole ring as one of the cyclos:**

This subclass is indented under subclass 275.4. Compounds wherein the 1,2-diazole ring is one of the cyclos of a polycyclo ring system.

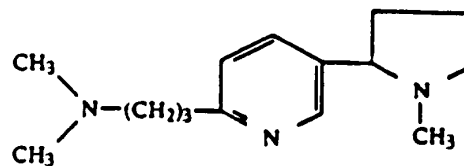
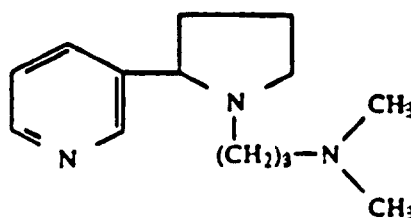
**276.1 Chalcogen attached directly to the 1,2-diazole ring by nonionic bonding:**

This subclass is indented under subclass 275.4. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium or tellurium) is attached directly to the 1,2-diazole ring by nonionic bonding.

**276.4 The additional hetero ring is five-membered consisting of one nitrogen and four carbons:**

This subclass is indented under subclass 268.1. Compounds wherein the additional hetero ring is five-membered and consists of one ring nitrogen and four ring carbons.

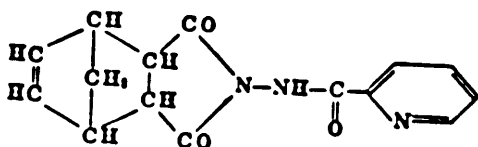
- (1) Note. Examples of compounds provided for herein are:



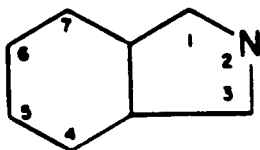
**276.7 Polycyclo ring system having the five-membered hetero ring as one of the cyclos:**

This subclass is indented under subclass 276.4. Compounds wherein the five-membered hetero ring is one of the cyclos of a polycyclo ring system.

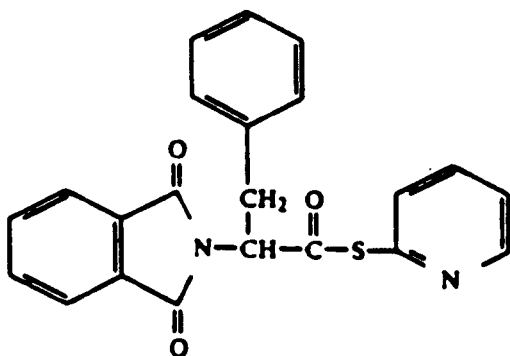
- (1) Note. An example of a compound provided for herein is:

**277.1 Bicyclo ring system which is isoindole (including hydrogenated):**

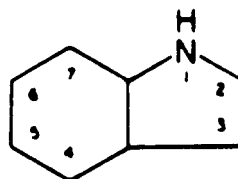
This subclass is indented under subclass 276.7. Compounds wherein the polycyclo ring system is bicyclo and consists of the following basic structure in which the bonds between the ring members may be single or double bonds:



- (1) Note. An example of a compound provided for herein is:

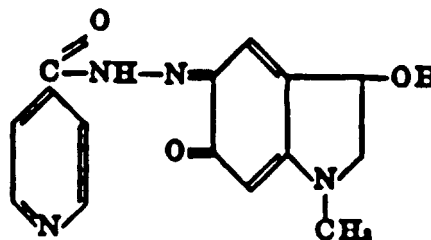
**277.4 Bicyclo ring system which is indole (including hydrogenated):**

This subclass is indented under subclass 276.7. Compounds wherein the polycyclo ring system is bicyclo and consists of the following basic structure in which the bonds between the ring members may be single or double bonds:

**277.7 Chalcogen attached directly to the five-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 277.4. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the five-membered hetero ring by nonionic bonding.

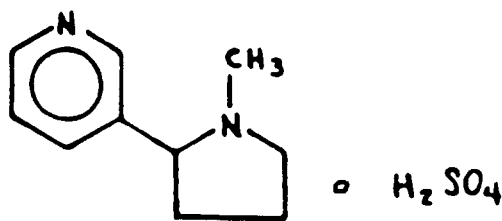
- (1) Note. An example of a compound provided for herein is:

**278.1 Having -C(=X)-, wherein X is chalcogen, bonded directly to the five-membered hetero ring:**

This subclass is indented under subclass 277.4. Compounds in which -C(=X)-, wherein X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to the five-membered hetero ring.

**278.4 Chalcogen attached directly to the five-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 276.4. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the five-membered hetero ring by nonionic bonding.

**278.7 Plural chalcogens attached directly to the five-membered hetero ring by nonionic bonding:**

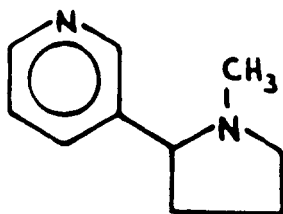
This subclass is indented under subclass 278.4. Compounds wherein at least two chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are attached directly to the five-membered hetero ring by nonionic bonding.

**279.1 Nitrogen or -C(=X)-, wherein X is chalcogen, attached directly to the five-membered ring by nonionic bonding:**

This subclass is indented under subclass 276.4. Compounds in which nitrogen or -C(=X)-, wherein X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the five-membered hetero ring by nonionic bonding.

**279.4 Nicotine, per se, or its salts:**

This subclass is indented under subclass 276.4. Compounds which have the following structure, or salts thereof:

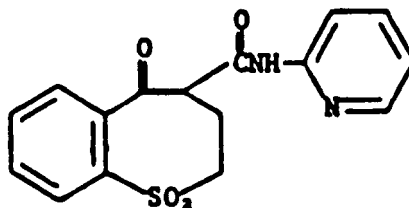


- (1) Note. In addition to nicotine, included herein are salts thereof, such as, nicotine sulfate.

**279.7 Ring sulfur in the additional hetero ring:**

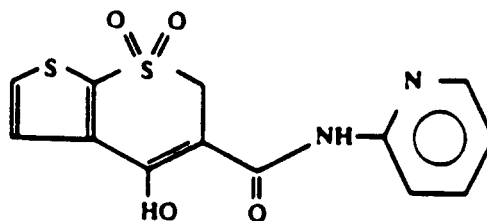
This subclass is indented under subclass 268.1. Compounds wherein the additional hetero ring contains ring sulfur.

- (1) Note. An example of a compound provided for herein is:

**280.1 The additional hetero ring is six-membered:**

This subclass is indented under subclass 279.7. Compounds wherein six ring atoms are present in the additional hetero ring.

- (1) Note. An example of a compound provided for herein is:

**280.4 The additional hetero ring is five-membered:**

This subclass is indented under subclass 279.7. Compounds wherein five ring atoms are present in the additional hetero ring.



**280.7 Plural ring sulfurs in the additional hetero ring:**

This subclass is indented under subclass 280.4. Compounds in which the additional hetero ring contains at least two ring sulfurs.

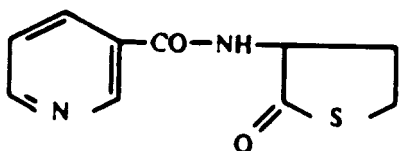
**281.1 Polycyclo ring system having the additional hetero ring as one of the cyclos:**

This subclass is indented under subclass 280.4. Compounds wherein the additional hetero ring is one of the cyclos of a polycyclo ring system.

**281.4 Nitrogen attached directly to the six-membered hetero ring or to the additional hetero ring by nonionic bonding:**

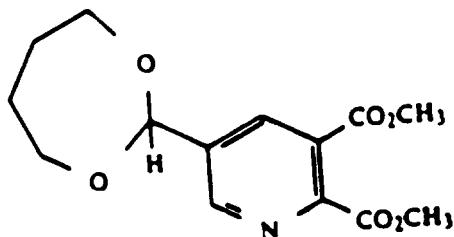
This subclass is indented under subclass 280.4. Compounds wherein the six-membered hetero ring or the additional hetero ring is attached directly to nitrogen by nonionic bonding.

- (1) Note. An example of a compound provided for herein is:

**281.7 Ring oxygen in the additional hetero ring:**

This subclass is indented under subclass 268.1. Compounds wherein the additional hetero ring contains ring oxygen.

- (1) Note. An example of a compound provided for herein is:

**282.1 The additional hetero ring is six-membered:**

This subclass is indented under subclass 281.7. Compounds wherein six ring atoms are present in the additional hetero ring.

**282.4 Plural ring oxygens in the additional hetero ring:**

This subclass is indented under subclass 282.1. Compounds in which the additional hetero ring contains at least two ring oxygens.

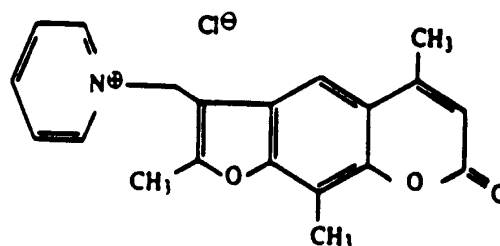
**282.7 Polycyclo ring system having the additional hetero ring as one of the cyclos:**

This subclass is indented under subclass 282.1. Compounds wherein the additional hetero ring is one of the cyclos of a polycyclo ring system.

**283.1 Chalcogen attached directly to the additional hetero ring by nonionic bonding:**

This subclass is indented under subclass 282.7. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the additional hetero ring by nonionic bonding.

- (1) Note. An example of a compound provided for herein is:

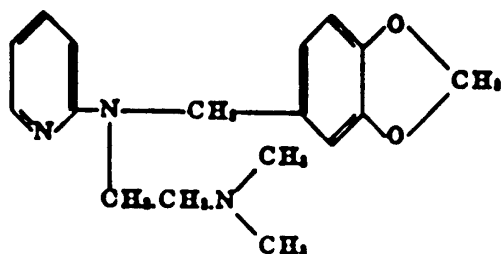
**283.4 The additional hetero ring is five-membered:**

This subclass is indented under subclass 281.7. Compounds wherein five ring atoms are present in the additional hetero ring.

**283.7 Plural ring oxygens in the additional hetero ring:**

This subclass is indented under subclass 283.4. Compounds in which the additional hetero ring contains at least two ring oxygens.

- (1) Note. An example of a compound provided for herein is:



**284.1 Polycyclo ring system having the additional hetero ring as one of the cyclos:**

This subclass is indented under subclass 283.4. Compounds wherein the additional hetero ring is one of the cyclos of a polycyclo ring system.

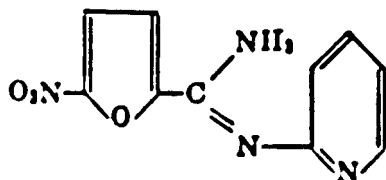
**284.4 Chalcogen attached directly to the additional hetero ring by nonionic bonding:**

This subclass is indented under subclass 283.4. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to the additional hetero ring by nonionic bonding.

**284.7 Nitrogen or -C(=X)-, wherein X is chalcogen, attached directly to the additional hetero ring by nonionic bonding:**

This subclass is indented under subclass 283.4. Compounds in which nitrogen or -C(=X)-, wherein X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is attached directly to the additional hetero ring by nonionic bonding.

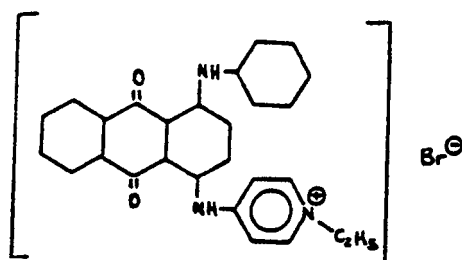
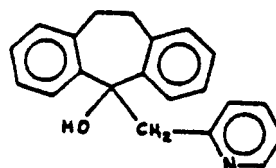
(1) Note. An example of a compound provided for herein is:



**285 Polycyclo-carbocyclic ring system having at least three cyclos:**

This subclass is indented under subclass 1. Compounds which contain a polycyclo-carbocyclic ring system having at least three cyclos.

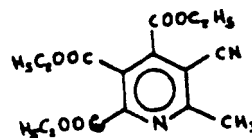
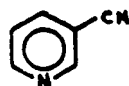
(1) Note. Examples of compounds provided for herein are:



**286 Cyano bonded directly to the six-membered hetero ring:**

This subclass is indented under subclass 1. Compounds which contain the C N group bonded directly to the six-membered hetero ring.

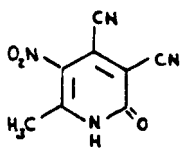
(1) Note. Examples of compounds provided for herein are:



**287 Additional cyano containing:**

This subclass is indented under subclass 286. Compounds which contain at least two -CbN groups.

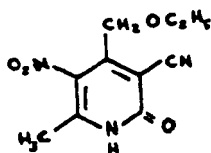
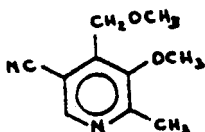
(1) Note. An example of a compound provided for herein is:



**288 Chalcogen bonded directly to ring carbon of the six-membered hetero ring:**

This subclass is indented under subclass 286. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the six-membered hetero ring.

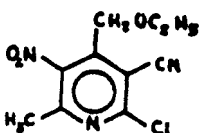
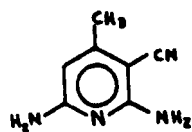
- (1) Note. Examples of compounds provided for herein are:



**289 Nitrogen attached directly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 286. Compounds wherein nitrogen is attached directly to the six-membered hetero ring by nonionic bonding.

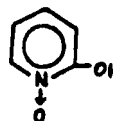
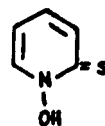
- (1) Note. Examples of compounds provided for herein are:



**290 Chalcogen bonded directly to ring carbon of the six-membered hetero ring:**

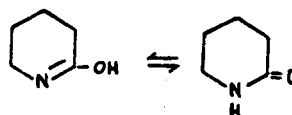
This subclass is indented under subclass 1. Compounds which contain chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) bonded directly to ring carbon of the six-membered hetero ring.

- (1) Note. Examples of compounds provided for herein are:



SEE OR SEARCH THIS CLASS, SUBCLASS:

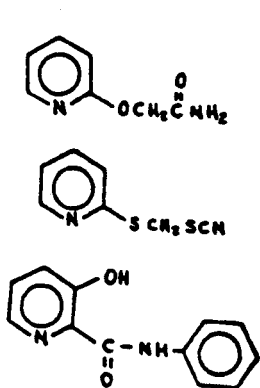
216, and 242+, for tautomers of chalcogen attached directly to pyridine or partially hydrogenated pyridine (i.e., chalcogen double bonded directly to piperidine), e.g.,



**291 Chalcogen and acyclic nitrogen bonded directly to the same carbon:**

This subclass is indented under subclass 290. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) and acyclic nitrogen are bonded directly to the same carbon.

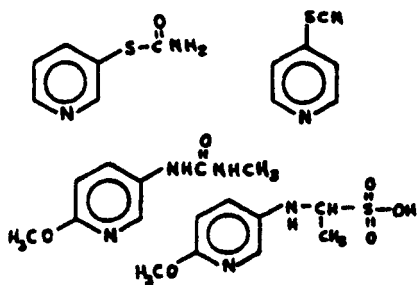
- (1) Note. Examples of compounds provided for herein are:



**292 The chalcogen or the acyclic nitrogen is bonded directly to the six-membered hetero ring:**

This subclass is indented under subclass 291. Compounds in which the chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) or the acyclic nitrogen is bonded directly to the six-membered hetero ring.

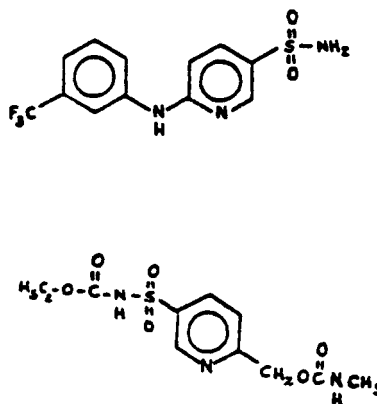
- (1) Note. Examples of compounds provided for herein are:



**293 Sulfur bonded directly to acyclic nitrogen:**

This subclass is indented under subclass 290. Compounds which contain sulfur bonded directly to acyclic nitrogen.

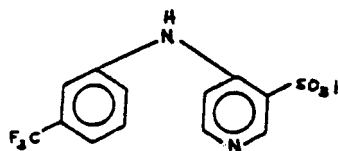
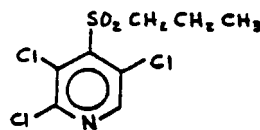
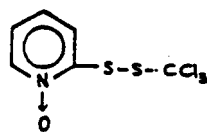
- (1) Note. Examples of compounds provided for herein are:



**294 Chalcogen bonded directly to chalcogen:**

This subclass is indented under subclass 290. Compounds which contain chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) bonded directly to chalcogen.

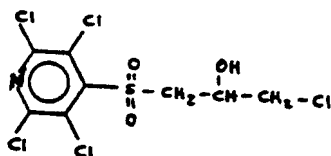
- (1) Note. Examples of compounds provided for herein are:



**295 Halogen bonded directly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 294. Compounds which contain halogen bonded directly to the six-membered hetero ring by nonionic bonding.

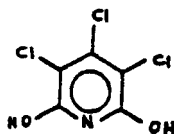
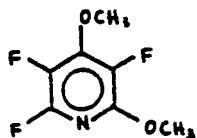
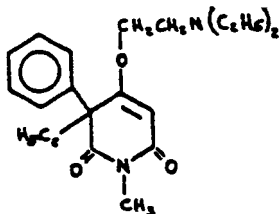
- (1) Note. An example of a compound provided for herein is:



**296 Plural chalcogens bonded directly to ring carbons of the six-membered hetero ring:**

This subclass is indented under subclass 290. Compounds containing at least two chalcogens (i.e., oxygens, sulfur, selenium, or tellurium) which are bonded directly to ring carbons of the six-membered hetero ring.

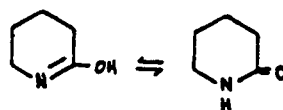
- (1) Note. Examples of compounds provided for herein are:



SEE OR SEARCH THIS CLASS, SUBCLASS:

- 219, for tautomers of chalcogen attached directly to pyridine or partially hydrogenated pyridine (i.e., chalcogen dou-

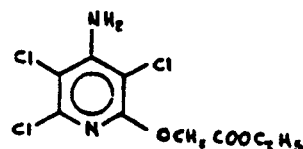
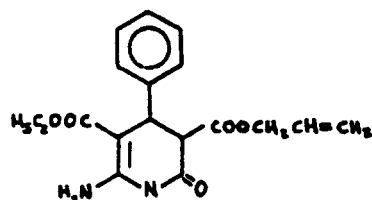
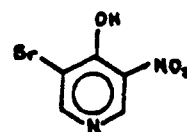
ble bonded directly to piperidine), e.g.,



**297 Nitrogen attached directly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 290. Compounds which contain nitrogen attached directly to the six-membered hetero ring by nonionic bonding.

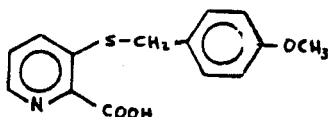
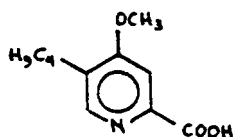
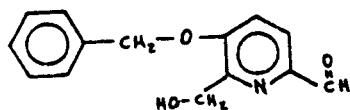
- (1) Note. Examples of compounds provided for herein are:



**298 Having -C(=X)-, wherein X is chalcogen, bonded directly to the six-membered hetero ring:**

This subclass is indented under subclass 290. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly to the six-membered hetero ring.

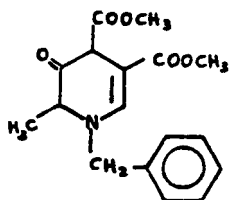
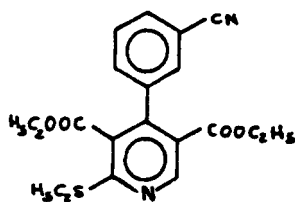
- (1) Note. Examples of compounds provided for herein are:



**299 Plural -C(=X)- groups, wherein X is chalcogen, bonded directly to the six-membered hetero ring:**

This subclass is indented under subclass 298. Compounds which contain at least two groups bonded directly to the six-membered hetero ring.

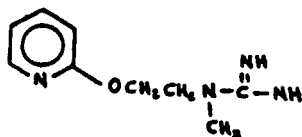
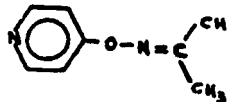
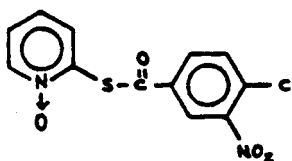
- (1) Note. Examples of compounds provided for herein are:



**300 Nitrogen attached indirectly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 290. Compounds in which nitrogen is attached indirectly to the six-membered hetero ring by nonionic bonding.

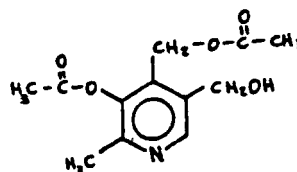
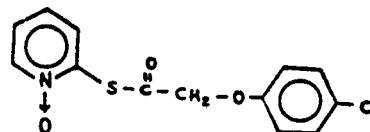
- (1) Note. Examples of compounds provided for herein are:



**301 Chalcogen attached indirectly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 290. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the six-membered hetero ring by nonionic bonding.

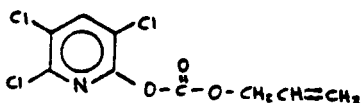
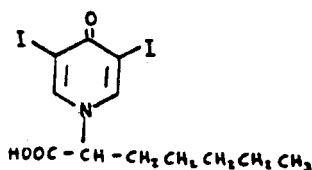
- (1) Note. Examples of compounds provided for herein are:



**302 Halogen attached directly or indirectly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 301. Compounds in which halogen is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

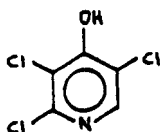
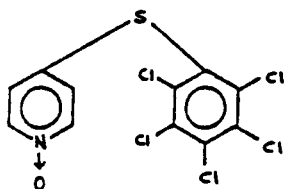
- (1) Note. Examples of compound provided for herein are:



**303 Halogen attached directly or indirectly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 290. Compounds in which halogen is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

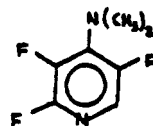
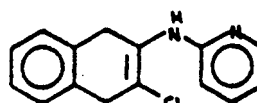
- (1) Note. Examples of compounds provided for herein are:



**304 Nitrogen attached directly to the six-membered hetero ring by nonionic bonding:**

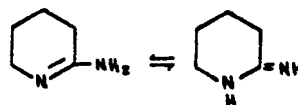
This subclass is indented under subclass 1. Compounds wherein nitrogen is attached directly to the six-membered hetero ring by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:



SEE OR SEARCH THIS CLASS, SUBCLASS:

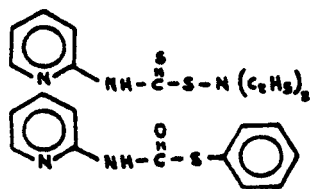
223, and 244, for tautomers of nitrogen attached directly to pyridine or partially hydrogenated pyridine (i.e., nitrogen double bonded directly to piperidine), e.g.,



**305 Sulfur and acyclic nitrogen bonded directly to the same carbon:**

This subclass is indented under subclass 304. Compounds which contain sulfur and acyclic nitrogen bonded directly to the same carbon.

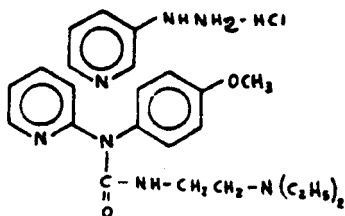
- (1) Note. Examples of compounds provided for herein are:



**306 Plural acyclic nitrogens bonded directly to the same carbon or single bonded directly to each other:**

This subclass is indented under subclass 304. Compounds wherein at least two acyclic nitrogens are bonded directly to the same carbon or single bonded directly to each other.

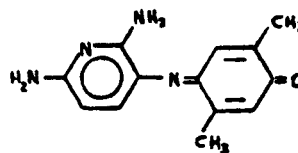
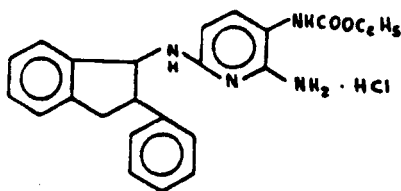
- (1) Note. Examples of compounds provided for herein are:



**307 Plural nitrogens attached directly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 304. Compounds in which at least two nitrogens are attached directly to the six-membered hetero ring by nonionic bonding.

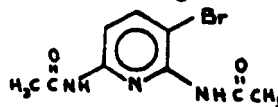
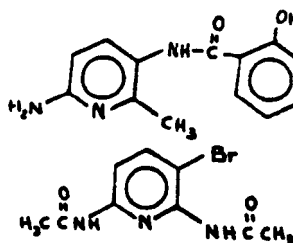
- (1) Note. Examples of compounds provided for herein are:



**308 Acyclic nitrogen bonded directly to A - C(=X)- group, wherein X is chalcogen:**

This subclass is indented under subclass 307. Compounds in which acyclic nitrogen is bonded directly to a group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

- (1) Note. Examples of compounds provided for herein are:

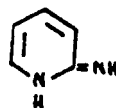
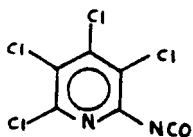
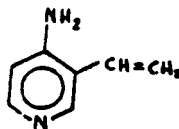
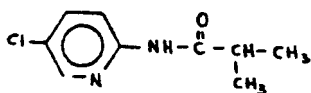


**309 Acyclic nitrogen bonded directly to A - C(=X)- group, wherein X is chalcogen:**

This subclass is indented under subclass 304. Compounds in which acyclic nitrogen is bonded directly to a group, wherein X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

- (1) Note. Examples of compounds provided for herein are:

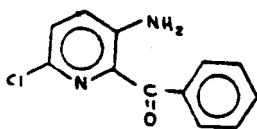
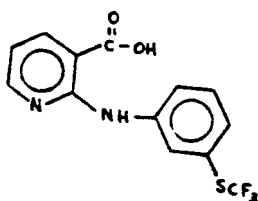




**310 Having -C(=X)-, wherein X is chalcogen, bonded directly to the six-membered hetero ring:**

This subclass is indented under subclass 304. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly to the six-membered hetero ring.

- (1) Note. Examples of compounds provided for herein are:



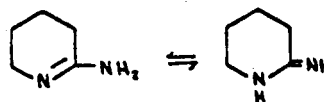
**311 The nitrogen bonded additionally only to hydrogen:**

This subclass is indented under subclass 304. Compounds in which the remaining valences of the nitrogen are bonded only to hydrogen.

- (1) Note. Examples of compounds provided for herein are:

SEE OR SEARCH THIS CLASS, SUBCLASS:

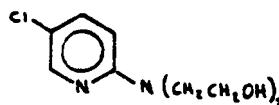
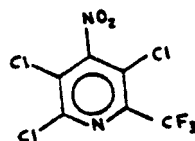
223, and 244, for tautomers of nitrogen attached directly to pyridine or partially hydrogenated pyridine (i.e., nitrogen double bonded directly to piperidine), e.g.,



**312 Chalcogen attached indirectly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 304. Compounds which contain chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) attached indirectly to the six-membered hetero ring by nonionic bonding.

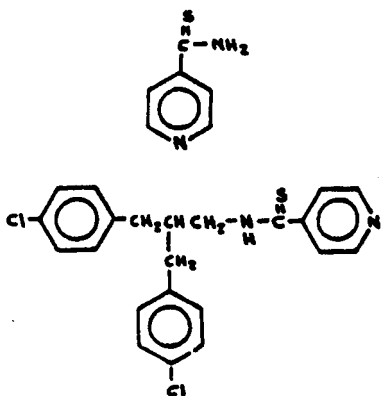
- (1) Note. Examples of compounds provided for herein are:



**313 Thiocarbonyl bonded directly to the six-membered hetero ring:**

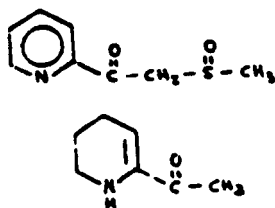
This subclass is indented under subclass 1. Compounds wherein a group is bonded directly to the six-membered hetero ring.

- (1) Note. Examples of compounds provided for herein are:

**314 Carbonyl bonded directly to the six-membered hetero ring:**

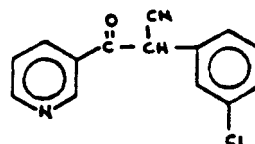
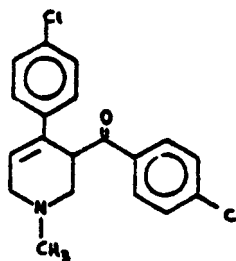
This subclass is indented under subclass 1. Compounds wherein a group is bonded directly to the six-membered hetero ring.

- (1) Note. Examples of compounds provided for herein are:

**315 At 3-position:**

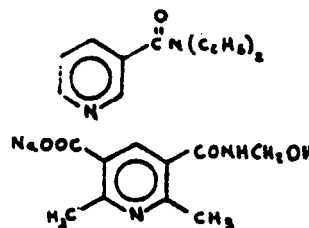
This subclass is indented under subclass 314. Compounds in which the carbonyl group is attached directly to the 3-position of the six-membered hetero ring.

- (1) Note. Examples of compounds provided for herein are:

**316 Acyclic nitrogen bonded directly to the carbonyl:**

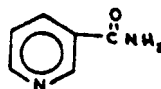
This subclass is indented under subclass 315. Compounds in which acyclic nitrogen is bonded directly to the carbonyl group.

- (1) Note. Examples of compounds provided for herein are:

**317 Processes of obtaining nicotinamide, per se:**

This subclass is indented under subclass 316. Processes whereby nicotinamide, i.e., pyridine-3-carboxylic acid amide, is prepared.

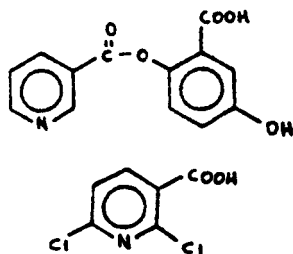
- (1) Note. Nicotinamide is represented by the structure:



**318 The carbonyl is in a -COO- group:**

This subclass is indented under subclass 315. Compounds in which the carbonyl is part of a -COO- group.

- (1) Note. Examples of compounds provided for herein are:

**319 Processes of obtaining nicotinic acid, per se, or a derivative of nicotinic acid wherein the only substituents are -COO- Groups, or salt thereof:**

This subclass is indented under subclass 318. Processes for the preparation of nicotinic acid, per se, or of a derivative thereof wherein the only substituents are additional -COO- groups, or of salts thereof.

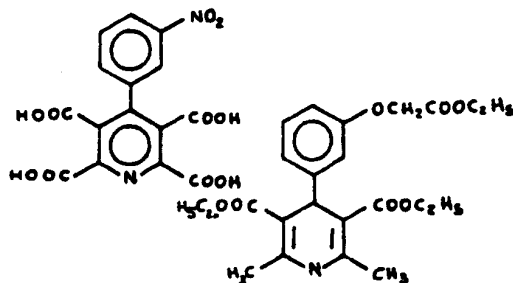
**320 By oxidation:**

This subclass is indented under subclass 319. Processes wherein the nicotinic acid or carboxy derivative thereof is obtained by an oxidation reaction.

**321 Additional -COO- group bonded directly to the six-membered hetero ring:**

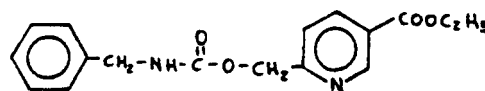
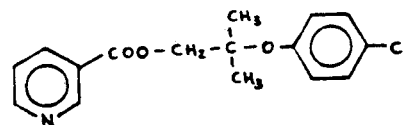
This subclass is indented under subclass 318. Compounds which contain an additional -COO- group bonded directly to the six-membered hetero ring.

- (1) Note. Examples of compounds provided for herein are:

**322 Carbocyclic ring containing:**

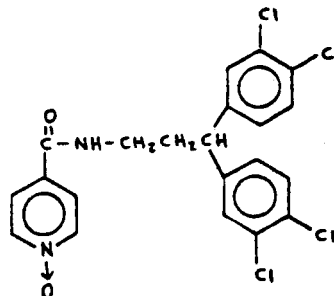
This subclass is indented under subclass 318. Compounds which contain a carbocyclic ring.

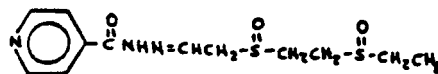
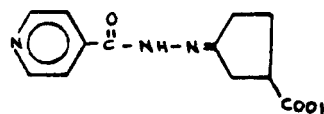
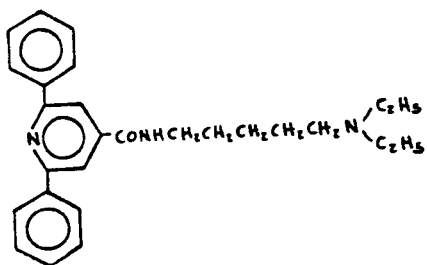
- (1) Note. Examples of compounds provided for herein are:

**323 Acyclic nitrogen bonded directly to the carbonyl:**

This subclass is indented under subclass 314. Compounds in which acyclic nitrogen is bonded directly to the carbonyl group.

- (1) Note. Examples of compounds provided for herein are:

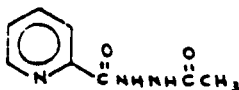
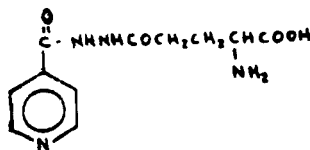




**324 Acyclic nitrogen single bonded directly to acyclic nitrogen:**

This subclass is indented under subclass 323. Compounds in which acyclic nitrogen is single bonded directly to acyclic nitrogen.

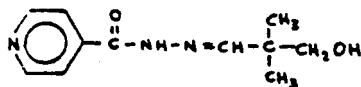
- (1) Note. Examples of compounds provided for herein are:



**325 Carbon double bonded directly to one of the acyclic nitrogens:**

This subclass is indented under subclass 324. Compounds in which carbon is double bonded directly to one of the acyclic nitrogens.

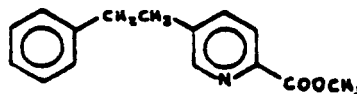
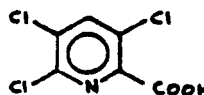
- (1) Note. Examples of compounds provided for herein are:



**326 The carbonyl is in a -COO- group:**

This subclass is indented under subclass 314. Compounds in which the carbonyl group is part of a -COO- group.

- (1) Note. Examples of compounds provided for herein are:



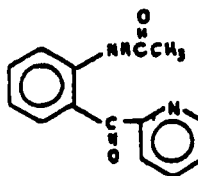
**327 Processes:**

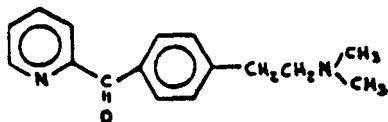
This subclass is indented under subclass 326. Processes of preparing, purifying, or recovering the carboxy containing pyridine compound.

**328 Acyclic nitrogen attached indirectly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 314. Compounds wherein acyclic nitrogen is attached indirectly to the six-membered hetero ring by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:

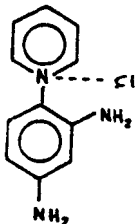
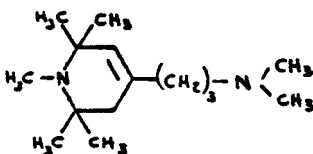




**329 Nitrogen attached indirectly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 1. Compounds wherein nitrogen is attached indirectly to the six-membered hetero ring by nonionic bonding.

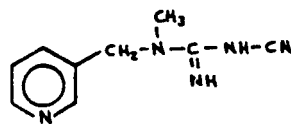
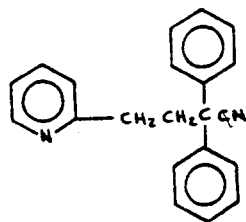
- (1) Note. An example of compounds provided for herein is:



**330 Cyano attached indirectly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 329. Compounds in which a -CbN group is attached indirectly to the six-membered hetero ring by nonionic bonding.

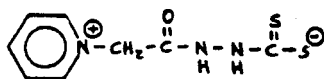
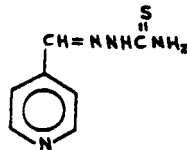
- (1) Note. Examples of compounds provided for herein are:



**331 Sulfur and acyclic nitrogen bonded directly to the same carbon:**

This subclass is indented under subclass 329. Compounds which contain a carbon atom to which is bonded directly sulfur and acyclic nitrogen.

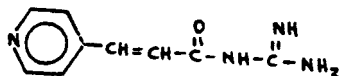
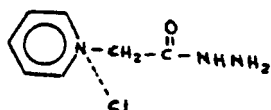
- (1) Note. Examples of compounds provided for herein are:



**332 Plural acyclic nitrogens bonded directly to the same carbon or single bonded directly to each other:**

This subclass is indented under subclass 329. Compounds wherein at least two acyclic nitrogens are bonded directly to the same carbon or single bonded directly to each other.

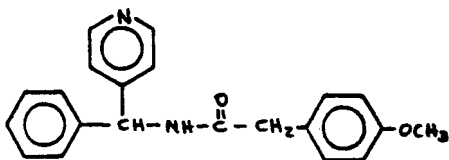
- (1) Note. Examples of compounds provided for herein are:



**333 The six-membered hetero ring and another ring bonded directly to the same carbon:**

This subclass is indented under subclass 329. Compounds wherein the six-membered hetero ring and another ring are bonded directly to the same carbon.

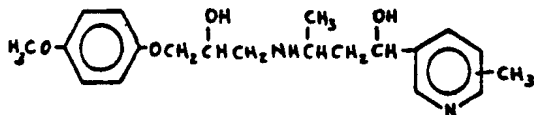
- (1) Note. An example of a compound provided for herein is:



**334 Chalcogen attached indirectly to the six-membered hetero ring by nonionic bonding:**

This subclass is indented under subclass 329. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded indirectly to the six-membered hetero ring by nonionic bonding.

- (1) Note. An example of a compound provided for herein is:

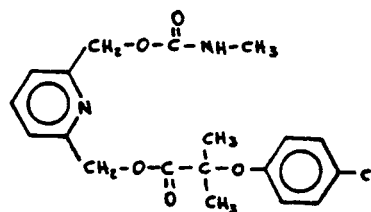
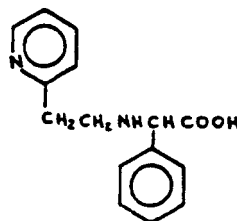


**335 The chalcogen, X, is part of a -C(=X)X-group, wherein the X's are the same or diverse chalcogens:**

This subclass is indented under subclass 334. Compounds in which the chalcogen, X, is part of a group, wherein the X's are the same or

diverse chalcogens (i.e., oxygen, sulfur, selenium, or tellurium).

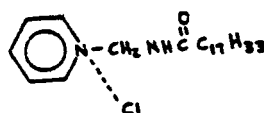
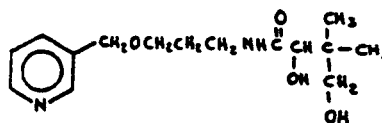
- (1) Note. Examples of compounds provided for herein are:



**336 Acyclic nitrogen bonded directly to A - C(=X)- group wherein X is chalcogen:**

This subclass is indented under subclass 334. Compounds wherein acyclic nitrogen is bonded directly to a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

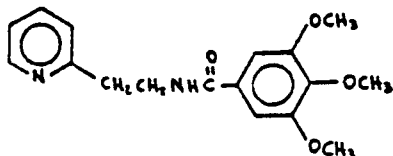
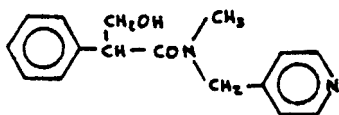
- (1) Note. Examples of compounds provided for herein are:



**337 Additional ring containing:**

This subclass is indented under subclass 336. Compounds which include an additional ring.

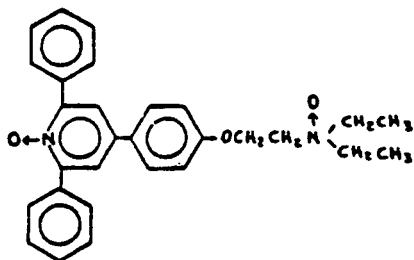
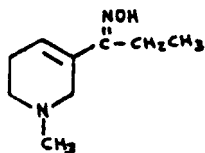
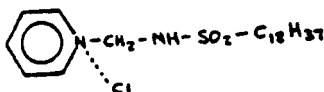
- (1) Note. Examples of compounds provided for herein are:



**338 Acyclic nitrogen bonded directly to chalcogen:**

This subclass is indented under subclass 334. Compounds wherein acyclic nitrogen is bonded directly to chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

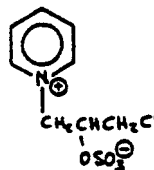
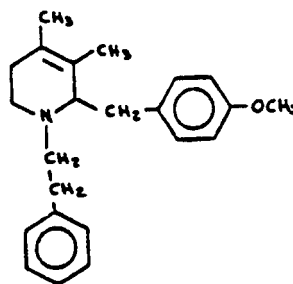
- (1) Note. Examples of compounds provided for herein are:



**339 Chalcogen attached indirectly to the six-**  
**membered hetero ring by nonionic bonding**  
**(e.g., sulfato betaines, etc.):**

This subclass is indented under subclass 1. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the six-membered hetero ring by non-ionic bonding.

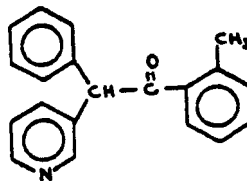
- (1) Note. Examples of compounds provided for herein are:

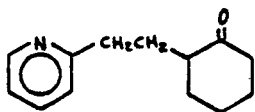


**340** The chalcogen, X, is in a  $\text{-C(=X)-}$  group:

This subclass is indented under subclass 339. Compounds in which the chalcogen, X (i.e., oxygen, sulfur, selenium, or tellurium), is in a group.

- (1) Note. Examples of compounds provided for herein are:

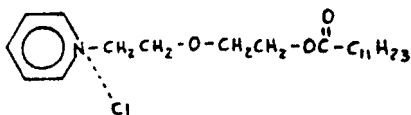




**341 The -C(=X)- is part of a -C(=X)X- group, wherein the X's are the same or diverse chalcogen:**

This subclass is indented under subclass 340. Compounds in which the is part of a group, wherein the X's are the same or diverse chalcogens (i.e. oxygen, sulfur, selenium, or tellurium).

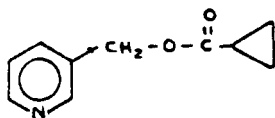
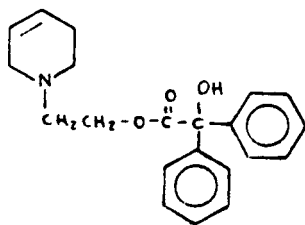
- (1) Note. An example of a compound provided for herein is:



**342 Additional ring containing:**

This subclass is indented under subclass 341. Compounds which contain an additional ring.

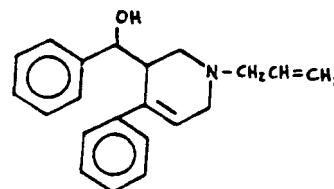
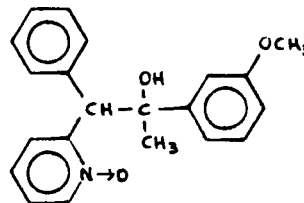
- (1) Note. Examples of compounds provided for herein are:



**343 The six-membered hetero ring and another ring bonded directly to the same carbon:**

This subclass is indented under subclass 339. Compounds wherein the six-membered hetero ring and another ring are bonded directly to the same carbon.

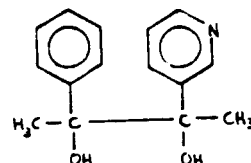
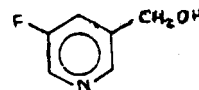
- (1) Note. Examples of compounds provided for herein are:



**344 The chalcogen is in an -OH or -OM group (M is group IA or group IIA light metal):**

This subclass is indented under subclass 339. Compounds in which the chalcogen is part of an -OH or -OM group; wherein M is a Group IA or Group IIA metal having a specific gravity less than four.

- (1) Note. Examples of compounds provided for herein are:

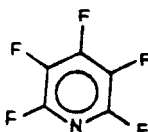
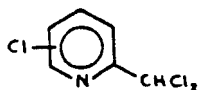




**345 Halogen attached directly to the six-membered hetero ring by nonionic bonding:**

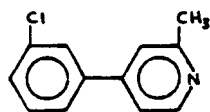
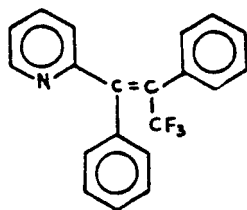
This subclass is indented under subclass 1. Compounds wherein halogen is attached directly to the six-membered hetero ring by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:

**346 Halogen attached indirectly to the six-membered hetero ring by nonionic bonding:**

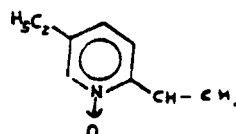
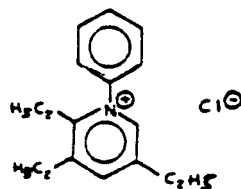
This subclass is indented under subclass 1. Compounds wherein halogen is attached indirectly to the six-membered hetero ring by nonionic bonding.

- (1) Note. Examples of compounds provided for herein are:

**347 The ring nitrogen of the six-membered hetero ring is pentavalent (e.g., quaternary pyridinium salts, etc.):**

This subclass is indented under subclass 1. Compounds in which the ring nitrogen of the six-membered ring is pentavalent.

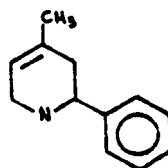
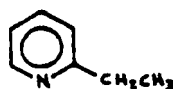
- (1) Note. Examples of compounds provided for herein are:

**348 Unsubstituted or hydrocarbyl substituted only or salts thereof:**

This subclass is indented under subclass 1. Compounds in which the six-membered hetero ring is unsubstituted or substituted by hydrocarbon radicals only, or salts thereof.

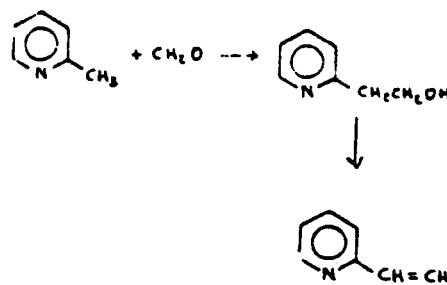
- (1) Note. Hydrocarbon radicals consist of carbon and hydrogen only. A substituent containing any other atom would not be provided for herein.

- (2) Note. Examples of compounds provided for herein are:



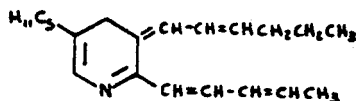
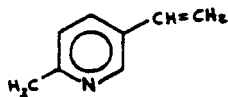
**349 Alkylation or dealkylation process:**

This subclass is indented under subclass 348. Processes in which an alkyl group is formed or removed.

**350 Unsaturated hydrocarbyl side chain:**

This subclass is indented under subclass 348. Compounds which contain an unsaturated hydrocarbon side chain.

- (1) Note. An unsaturated hydrocarbon side chain is a chain consisting of carbon and hydrogen which contains at least one double or triple bond.
- (2) Note. Examples of compounds provided for herein are:

**351 Stabilized alkenyl pyridines:**

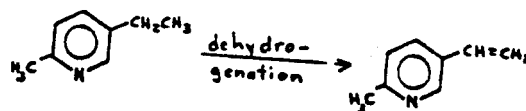
This subclass is indented under subclass 350. Compounds which are alkenyl substituted pyridines that have been stabilized against polymerization.

- (1) Note. This stabilization is normally accomplished by adding to the alkenyl pyridine a polymerization inhibiting amount of certain compounds, such as an alkali-metal polysulfide, an iron halide, an indigo, etc.

**352 Process of forming the unsaturated hydrocarbyl side chain:**

This subclass is indented under subclass 350. Processes whereby the unsaturated hydrocarbon side chain on the six-membered hetero ring is formed.

- (1) Note. Examples of processes provided for herein are:

**353 Purification or recovery:**

This subclass is indented under subclass 348. Processes wherein the unsubstituted or hydrocarbyl substituted pyridine is separated from impurities or from the reaction medium.

- (1) Note. This subclass provides for such processes as the vapor phase separation or 2,6-lutidine from beta- and gamma-piccolines, the separation of aromatic pyridines using alkylene carbonates, the recovery of pyridine bases, the purification of 3-picoline, etc.

END